International Congress in Honour of

Professor Ravi P. Agarwal

June 23–26, 2014

Uludag University, Bursa–Turkey
Scientific Committee

R. P. Agarwal (USA) agarwal@tamuk.edu
J. L. Bona (USA) bona@math.uic.edu
A. Bruno (Russia) brunoa@mail.ru
I. N. Cangul (Turkey) cangul@uludag.edu.tr
A. S. Cevik (Turkey) sinan.cevik@selcuk.edu.tr
E. Di Benedetto (USA) dibe@math.vanderbilt.edu
R. Finn (USA) finn@math.stanford.edu
R. P. Gilbert (USA) gilbert@math.udel.edu
W. M. Haddad (USA) wassim.haddad@aerospace.gatech.edu
I. Kiguradze (Georgia) kig@rmi.ge
W. A. Kirk (USA) kirk@math.uiowa.edu
I. Lasiecka (USA) il2v@virginia.edu
V. Lokesha (India) lokiv@yahoo.com
A To-Ming Lau (Canada) anthonyt@ualberta.ca
J. Mawhin (Belgium) mawhin@math.ucl.ac.be
G. Milovanovic (Serbia) gradimir.milovanovic@mac.com
B. Mordukhovich (USA) boris@math.wayne.edu
J. Neuberger (USA) jwn@unt.edu
J. Nieto (Spain) juanjose.nieto.roig@usc.es
D. Motreanu (France) motreanu@univ-perp.fr
D. O’Regan (Ireland) donal.oregan@muigalway.ie
S. Park (Korea) shpark@math.snu.ac.kr
A. Peterson (USA) apeterso@math.unl.edu
V. Radulescu (Romania) vicentiu.radulescu@imar.ro
S. Reich (Israel) sreich@technix.technion.ac.il
E. Savas (Turkey) esavas@ticaret.edu.tr
M. D. Schechter (USA) mschecht@math.uci.edu
Y. Simsek (Turkey) ysimsek@akdeniz.edu.tr
W. Takahashi (Japan) wataru@is.titech.ac.jp
D. Taşcı (Turkey) dtasci@gazi.edu.tr
R. Triggiani (USA) rt7u@virginia.edu
J. R. L. Webb (UK) jrlw@maths.gla.ac.uk
H.-K. Xu (Taiwan) xuhk@ukzn.ac.za
Local Organizing Committee

Ismail Naci Cangul (Uludag University, Turkey)
Ahmet Sinan Cevik (Selcuk University, Turkey)
Nihat Akgunes (Selcuk University, Turkey)
Elvan Akın (Missouri University, USA)
Firat Ates (Balikesir University, Turkey)
Muge Capkin (Uludag University, Turkey)
Elif Cetin (Uludag University, Turkey)
Musa Demirci (Uludag University, Turkey)
Ayşe Feza Güvenilir (Ankara University, Turkey)
Sebahattin Ikikardes (Balikesir University, Turkey)
Nazlı Yıldız Ikikardes (Balikesir University, Turkey)
Ilker Inam (Uludag University, Turkey)
Erdal Karapınar (Atlın University, Turkey)
Billur Kaymakçalan (Çankaya University, Turkey)
Hacer Ozden (Uludag University, Turkey)
Birsen Ozgür (Uludag University, Turkey)
Metin Ozturk (Uludag University, Turkey)
Recep Sahin (Balikesir University, Turkey)
Umit Sarp (Balikesir University, Turkey)
Ekrem Savas (Istanbul Commerce University, Turkey)
Gokhan Soydan (Uludag University, Turkey)
Kenan Taş (Çankaya University, Turkey)
Dursun Taşçı (Gazi University, Turkey)
Ahmet Tekcan (Uludag University, Turkey)
Sibel Yalcın Tokgoz (Uludag University, Turkey)
Elif Yasar (Uludag University, Turkey)
Emrullah Yasar (Uludag University, Turkey)
Aysun Yurttas (Uludag University, Turkey)
Preface

On behalf of the Scientific and Organising Committees, I would like to welcome you all to Bursa for this International Congress.

First of all, I would like to mention the willingness and capacity of the Mathematics Department at Uludag University to organize and actively take part in Mathematical events. We have been organizing numerous national and international congresses, conferences, workshops and seminars with the help of our colleagues at other universities. The following are just a few examples of the events in last years.

On 21st-23rd August, 2008, we organized The Twentieth International Congress of the Jangjeon Mathematical Society, of which I have been honoured to be a member, in Karinna Hotel at Mount Uludag. The refereed proceedings of this congress were published in Advanced Studies in Contemporary Mathematics and Proceedings of the Jangjeon Mathematical Society.

Following this event, we organized The International Congress in Honour of Professor H. M. Srivastava on his 70th Birth Anniversary, again in Karinna Hotel on 18th-21st August, 2010. The duly-refereed proceedings of this congress were published as a special volume of the Elsevier journal Applied Mathematics and Computation.

2011 was the year that we hosted the 24th National Mathematics Symposium at Uludag University.

Finally The International Congress in Honour of Professor Hari M. Srivastava was held at the Auditorium at the Campus of Uludag University, Bursa, Turkey on 23rd-26th August, 2012. The duly-refereed proceedings of this congress were published in special volumes of the four open access Springer journals Advances in Difference Equations, Boundary Value Problems, Fixed Point Theory and Applications and Journal of Inequalities and Applications.

Prof. Dr. Ravi P. Agarwal has been coworking with many Turkish mathematicians in a wide range of topics and his contributions, in particular to Turkish mathematics and mathematicians, are endless. This is one of the reasons that made me proud to organize The International Congress in Honour of Professor Ravi P. Agarwal on 23rd-26th June, 2014. We hoped to thank him, at least partially, for his support and contributions to Turkish mathematicians. It is my great pleasure to welcome you all to The International Congress in Honour of Professor Ravi P. Agarwal and to Bursa.

The duly refereed proceedings of this congress will be published in two special issues in open access Springer journals Advances in Difference Equations and Applications and Journal of Inequalities and Applications. I especially thank in advance to the editor Prof. Dr. Ravi P. Agarwal, and to the guest editors Prof. Dr. Billur Kaymakçalan, Prof. Dr. Elvan Akın and Prof. Dr. Erdal Karapınar who spend a lot of time and effort with me to produce the best possible special issues to be remembered for many years.

Please allow me to thank all my colleagues and students who worked with me for months to make this congress a success. One particular mathematician needs to be mentioned especially: My good friend and coworker Prof. Dr. Ahmet Sinan Cevik, who is the co-chair of this congress and helped me in many aspects. I am proud to organize all these meetings together with this special people and I wish our cowork and friendship will go on forever. My final thanks go to Prof. Dr. Ahmet Tekcan who had spent serious amount of time to produce this booklet as nicely as it is.

Finally, on behalf of all the friends and colleagues, I take this opportunity to wish Prof. Dr. Agarwal a happy life together with all his beloved ones and continuation of his contributions to Mathematics and Mathematicians.

Prof. Dr. Ismail Naci Cangul
Chair of the Congress,
Dean of the Faculty of Arts and Science
Uludag University, Gorukle Campus, 16059 Bursa, Turkey
cangul@uludag.edu.tr, ncangul@gmail.com
http://cangul.home.uludag.edu.tr/
http://www.ismailnacicangul.com/
About Prof. Dr. Ravi P. Agarwal

**Age and Date of Birth:** 66 years, 10th July, 1947

**Present Position:** Professor & Chairman, Department of Mathematics Texas A&M University-Kingsville Kingsville, TX 78363, U.S.A.

e-mail: agarwal@tamuk.edu

**Telephone Numbers:** 1(361)593 - 2600 (office) 1(361)221 - 1388 (personal)

**Degrees:** Master in Science (1969) Agra Univ., 1st class, 2nd position Ph.D. (1973) Indian Institute of Technology, Madras, India

**Field of Research:** Numerical Analysis, Differential and Difference Equations, Inequalities, Fixed Point Theorems

**Research Experience:** 44 years

**Research Publications:** Over 1175 research papers in the following Journals and Series:

1. Acta Applicandae Mathematicae
2. Acta Mathematica Hungarica
3. Advances in Difference Equations
4. Advances in Mathematical Sciences and Application
5. Aequationes Mathematicae
6. Analele Stiintifice ale Universitatii. ‘Al. I. Cuza’ din Iasi
7. Annales Polonici Mathematici
8. Applied Mathematics and Computation
9. Applied Mathematics Letters
10. Applicable Analysis
11. Archivum Mathematicum (Brno)
13. BIT
14. Boundary Value Problems
16. Bulletin UMI
17. Chinese Journal of Mathematics
18. Communications in Applied Analysis
19. Communications in Applied Numerical Methods
20. Computers and Mathematics with Applications
21. Differential and Integral Equations
22. Dynamic Systems and Applications
24. Dynamics of Continuous, Discrete and Impulsive Systems
25. Fixed Point Theory and Applications
26. Fluid Dynamics Research
27. Functional Differential Equations
28. Funkcialaj Ekvacioj
29. Georgian Mathematical Journal
30. Hiroshima Mathematical Journal
31. IMA Journal of Applied Mathematics
32. Indian Journal of Pure and Applied Mathematics
33. International Journal of Computer Mathematics
34. *International Series of Numerical Mathematics, Birkhäuser
35. Japan Journal of Industrial and Applied Mathematics
36. Journal of Applied Mathematics and Stochastic Analysis
37. Journal of Approximation Theory
38. Journal of the Australian Mathematical Society. Series A
40. Journal of Computational and Applied Mathematics
41. Journal of Difference Equations and Applications
42. Journal of Differential Equations
43. Journal of Inequalities and Applications
44. Journal of the Korean Mathematical Society
45. Journal of the London Mathematical Society
46. Journal of Mathematical Analysis and Applications
47. Journal of Mathematical and Physical Sciences
48. Journal of Nonlinear and Convex Analysis
49. Journal of Optimization Theory and Applications
50. Korean Journal of Computational and Applied Mathematics
51. *Lecture Notes in Mathematics, Springer-Verlag
52. Mathematica Slovaca
53. Mathematical Inequalities and Applications
54. Mathematical Methods in the Applied Sciences
55. Mathematical and Computer Modelling
56. Mathematical Problems in Engineering: Theory, Methods and Applications
57. Mathematics Seminar Notes, Kobe University
58. Mathematika
59. Mathematische Nachrichten
60. *Matscience Reports
61. Neural, Parallel and Scientific Computations
62. Nonlinear Analysis Forum
63. Nonlinear Analysis : Theory, Methods and Applications
64. Nonlinear Functional Analysis and Applications
65. Nonlinear World
66. *North-Holland Mathematics Studies
67. PanAmerican Mathematical Journal
68. Proceedings of the American Mathematical Society
69. *Proceedings of the Conference of ISTAM
71. *Proceedings of the First World Congress of Nonlinear Analysts, Walter de Gruyter
72. Proceedings of the Indian Academy of Sciences
73. Proceedings of the Royal Society of Edinburgh
74. Proceedings of the Edinburgh Mathematical Society
76. Proceedings of the Tamil Nadu Acad. Sci.
77. Publications of the Research Institute for Mathematical Sciences
78. Results in Mathematics
79. Rivista di Mat. della Univ. Parma
80. Rocky Mountain Journal of Mathematics
81. Series in Mathematical Analysis and Applications, Gordon and Breach
82. *Stability and Control: Theory, Methods and Applications, Gordon and Breach
83. Studies in Applied Mathematics
84. Tamkang Journal of Mathematics
85. Tohuku Mathematical Journal
86. Topological Methods in Nonlinear Analysis
87. Utilitas Mathematica
Monographs and Books:


‘This comprehensive monograph provides an exhaustive state of the art coverage of basic results on boundary value problems associated with higher–order differential equations. It is without question one of the most through reviews I have seen, on any subject. Those doing research in this field would be well advised to refer to this work. The author consistently poses questions to researchers who are looking for open problems.’ (Mathematical Reviews)

‘The monograph is an excellent account of the various techniques available in the literature to prove existence and uniqueness of various boundary value problems which occur in applications. Graduate students and research mathematicians will find it very useful.’ (Zentralblatt für Mathematik)


‘This book is a virtual encyclopedia of results concerning difference equations. It is well written and is easy to read. This book covers over 400 recent publications. This book should not only be of interest to mathematicians and statisticians but also to electrical engineers, biologists, psychologists, and sociologists to name a few. This indeed is a very good book to have in ones own personal library.’ (Mathematical Reviews)

‘This new monograph combines all aspects of the theory and methods of solutions of difference equations and their applications in real world problems providing in–depth coverage of more than 400 recent publications. This monograph with the wealth of information it contains is very well come.’(Newsletter on Computational and Applied Mathematics)

‘This book contains a complete account of standard results concerning difference equations, as well as an extensive discussion of recent papers concerning the theory and practice of their solutions. This book should be useful both as textbook and for reference.’(Mathematika)

‘This book is essential for the enrichment of knowledge in mathematics, physics and statistics. The comprehensive compilation of the book is useful for researchers of natural philosophy.’ (Indian J. Physics)

‘Comprehensive treatment develops discrete versions of Rolle’s, mean value, Kneser’s theorems · · · ’(The American Mathematical Monthly)

‘This excellent monograph combines all aspects of the theory and methods of solutions of difference equations and their applications providing in–depth coverage of more than 400 recent publications. It serves as a basic reference for mathematicians and users of mathematics interested in differential and difference equations and their applications.’(Acta Sci. Math. Szeged)

‘It is a definite reference for applied mathematicians, numerical analysts, physicists, engineers, and graduate–level students in courses on difference equations.’(INSPEC The Institute of Electrical Engineers)

‘Focusing on a wide range of possible mathematical uses, the book offers various methods of solving linear and nonlinear difference equations.’(Bulletin Bibliographique)

‘Deals with the many aspects of difference equations including theory, methods of solutions, and applications. Reviews more than 400 recent related publications.’ (The New York Public Library)


‘The book is devoted to a branch of the theory of differential equations that is classical on the one hand but still alive and developing on the other hand. The book is very interesting and well written. It is warmly recommended to any student in analysis and to any specialist in the theory of differential equations.’ (Mathematical Reviews and Zentralblatt für Mathematik)

‘A main theme of this book lies behind the selection and organization of the material in it is the use of interpolation in the theory of ordinary differential equations ... It will no doubt find uses among specialists in differential equations. Otherwise, the wealth of detail and the precision of the error estimates in it go beyond what is generally available in book or monograph form and commend the work to a more general audience.’ (Journal of Approximation Theory)


‘The monograph under review presents a complete survey of results related to the Opial’s inequality developed over the last three decades ... The book under review is very well written and most of the material is presented with detailed proofs. The book can be warmly recommended not only to specialist working in the area of mathematical analysis and applications but also to graduate students, engineers and researchers in the applied sciences.’ (Zentralblatt für Mathematik)


‘One of the specialists in the field is without doubt Ravi P Agarwal. His previous book Difference Equations and Inequalities (1992) is a survey of the theory of difference equations and contains a wealth of information for the researchers. This new book, co–authored by Patricia J. Y. Wong, can be seen as an update of the first one ... The results in this book are of great interest to other specialists in the field. This book offer an easy way to get access to them.’ (Mathematical Reviews)

‘The book contains a collection of recent results and it will serve as a reference book for researchers in discrete dynamical systems and their applications and reader will also find material, which is not available in other books on difference equations. It will also be of interest to graduate students interested in the theory of finite difference equations and their applications. The presentation is clear and it is a welcome addition to the literature.’ (Zentralblatt für Mathematik)


‘Agarwal’s great knowledge of the literature in this area makes this book very appealing. The book will be useful for a graduate course concerned with boundary value problems for either differential equations or difference equations. It also would be an excellent book for mathematicians doing research in this area.’ (Mathematical Reviews)


‘The majority of the book is devoted to some of the recent developments by the authors. The book should be a good reference book and the extensive bibliography could prove to be very helpful. In addition, the examples at the end of each chapter are a good source of illustrative material.’ (Mathematical Reviews)


‘This good monograph contains some of the recent developments in the oscillation theory of difference and functional-differential equations (FDEs) ... It provides an excellent reference to the recent work for research workers in this interesting field.’ (Mathematical Reviews)


‘This book develops the basic ideas used in proving the existence of solutions to boundary value problems on infinite intervals and it mainly contains the results which the authors have obtained in their
research during the last decade.’ Mathematical Reviews)


‘Those who are already in the field will welcome the systematic organization of the material and find the book to be a valuable reference.’ Mathematical Reviews)


‘The authors study systematically various techniques about oscillation and nonoscillation of each type of equations. There are numerous examples in each chapter and each chapter ends with detailed historical notes and an extensive list of references. The book is very readable and it is a valuable source and an important contribution to oscillation theory.’ Mathematical Reviews)


‘The authors have produced a monograph in which they present some of the recent development in existence of solutions theory of nonlinear singular integral and differential equations. In addition to theory, the monograph focuses on applications. Much of the material focuses on recent developments of the authors. A primary purpose of the monograph is to provide a readable account and introduce the material to a broader audience.’ Mathematical Reviews)


‘This is truly a compendium of many different results, all having a relation in some way to results which may or may not be fairly well known for the continuous case. One of the very useful features of this book is the discussion at the end of each chapter of the results presented and references to the original sources, as far as the authors are aware. Moreover, the authors have included a large number of examples throughout which serve to illustrate the many and varied results which are obtained. All of the authors are very well known in oscillation theory and have all contributed a great deal to this area. It is indeed a useful addition to the literature to have such a comprehensive survey of the area and to point the direction to new results. It will serve as a valuable reference in the area for many years to come.’ Mathematical Reviews)


Teaching and Other Experiences:

1. 44 years, various courses for B.Sc., M.Sc., B.E. and M.E.
2. U.G.C. Visiting Professor, Marathwada University, Aurangabad (February, 1979).
4. Alexander Von Humboldt Foundation Fellow at der Ludwig -Maximilians Universitä t, München, with Prof. Dr. G. Hämmerlin. (1980-81)
5. Visiting Professor, Instituto Matematico, Firenze, Italy (1981-82), with Prof. Roberto Conti.
8. Visiting Scientist, The University of Western Australia (April 1989).
9. Visiting Professor, University of Saskatchewan, Canada (April 1991).
11. Visiting Professor, Politecnico di Milano, Milano, Italy (June 1995).
12. Visiting Professor, University of Delaware, USA (June 1997–May 1998).
13. Visiting Professor, Politecnico di Milano, Milano, Italy (December 2007).
14. Visiting Professor, University of Roma, Italy (May 2007).
15. Visiting Professor, Politecnico di Milano, Milano, Italy (June 2008).
16. KFUPM Chair Professor, King Fahd Univ. Petro. Minerals, Saudi Arabia (June 2010).
17. KFUPM Chair Professor, King Fahd Univ. Petro. Minerals, Saudi Arabia (May-July 2011).
18. Honorary Distinguished Professor, King Abdal Aziz University, Saudi Arabia (2011–).

Thesis Direction:


Citations: Over 7000 in the following Journals and Series are known.

2. Advances in Computational Mathematics
3. Advances in Difference Equations
4. Annales Polonici Mathematici
7. Applicable Analysis
8. Archiv der Mathematik
9. Arch. Math. (Brno)
10. Astrophysics and Space Science
11. Boundary Value Problems
15. Computing
16. CWI Monograph, North-Holland
18. de Gruyter Series in Nonlinear Analysis and Applications
19. Differential and Integral Equations
20. Dynamic Systems and Applications
21. Fixed Point Theory and Applications
22. Funkcialaj Ekvacioj
23. IEEE Trans. on Automatic Control
27. Jour. Approximation Theory
29. Jour. Comp. Physics
31. Jour. Differential Equations
32. Jour. Inequalities and Applications
35. Mathematical and Computer Modelling
38. Mathematics Studies, North Holland
39. Mathematika
40. Nonlinear Analysis : TMA
41. Nonlinear Times and Digest
42. Numerische Mathematik
43. Pitman Advanced Publishing Program
44. Prentice Hall Series in Computational Mathematics
46. Proc. R. Soc. London
47. Proc. Royal Society of Edinburgh
50. SIAM Review
52. World Scientific Series in Applicable Analysis
53. ZAA
54. ZAMM

Refereed more than 5000 papers for the following Journals:

1. Journal of Differential Equations
2. Journal Approximation Theory
3. Journal of Mathematical Analysis and Applications
4. Nonlinear Analysis
5. Applicable Analysis
6. Applied Mathematics Letters
7. Applied Mathematics & Optimization
8. Journal of Computational and Applied Mathematics
9. Communications in Applied Numerical Methods
10. Communications in Numerical Methods in Engineering
11. Computers & Mathematics with Applications
12. Advances in Computational Mathematics
13. Dynamic Systems and Applications
15. Archivum Mathematicum
16. Mathematical and Computer Modelling
17. Mathematische Nachrichten
22. IEEE Trans. Automatic Control

**Service as a reviewer of research monographs:** Refereed several research monographs for Kluwer Academic, Springer–Verlag and World Scientific publishers. I have also written reviews for several monographs in the journal SIAM Reviews.

**Member of the Editorial Boards:**

2. Editor-in-Chief, Advances in Difference Equations, Springer, U.S.A.
8. Editor, Series in Mathematical Analysis and Applications, Gordon and Breach, U.K.
11. Associate Editor, Advances in Mathematical Sciences and Application, Japan.
15. Associate Editor, Communications in Applied Analysis, Dynamic Publishers, U.S.A.
17. Associate Editor, Communications of the Korean Mathematical Society, Korea.(till 2010)
19. Associate Editor, Dynamics of Continuous, Discrete and Impulsive Systems, University of Waterloo, Canada.
20. Associate Editor, Dynamics of Continuous, Discrete and Impulsive Systems (series B, Applied Mathematics), University of Waterloo, Canada.(till 2008)
21. Associate Editor, Facta Universitatis: Mathematics and Informatics, University of Nis, Yugoslavia.
22. Associate Editor, Functional Differential Equations, The Research Institute, College of Judea and Samaria, Israel.
27. Associate Editor, Journal of Inequalities in Pure and Applied Mathematics, Australia
29. Associate Editor, Journal of Nonlinear and Convex Analysis, Yokohama Publishers, Japan
30. Associate Editor, The Korean Journal of Computational and Applied Mathematics, Korea (till 2010)
31. Associate Editor, Mathematical and Computer Modelling, Elsevier, The Netherlands. (till 2012)
32. Associate Editor, Mathematical Inequalities and Applications, Zagreb, Croatia.
34. Associate Editor, Memoirs on Differential Equations and Mathematical Physics, Publishing House GCI, Tiblisi, Republic of Georgia.
35. Associate Editor, Neural, Parallel and Scientific Computations, Dynamic Publishers, U.S.A.
36. Associate Editor, Nonlinear Differential Equations: Theory, Methods and Applications, Andhra University, India.
37. Associate Editor, Nonlinear Analysis Forum, Korea.
39. Associate Editor, Nonlinear Oscillations, The Publication of the Institute of Mathematics, National Academy of Sciences of Ukraine, Ukraine
42. Associate Editor, East Asian Mathematical Journal, The Busan Gyeongnam Mathematical Society, Korea.

**Editorial Work:**


**International Conferences:** Participated and gave invited lectures in the following conferences

1. Approximate Methods for Navier - Stokes Problems (Paderborn 1979, Germany)
2. General Inequalities 3 (Oberwolfach 1981, Germany)
3. Operator Inequalities (Oberwolfach 1981, Germany)
4. Ordinary Differential Equations (Oberwolfach 1983, Germany)
5. General Inequalities 4 (Oberwolfach 1983, Germany)
6. International Conference on Qualitative Theory of Differential Equations (Edmonton 1984, Canada)
8. EQUADIFF 6 (Brno 1985, Czechoslovakia)
9. General Inequalities 5 (Oberwolfach 1986, Germany)
11. International Conference on Functional Equations and Inequalities (Szczawnica, 1987, Poland)
13. International Symposiumon Asymptotic and Computational Analysis (Winnipeg 1989, Canada)
14. General Inequalities 6 (Oberwolfach 1990, Germany)
15. First World Congress of Nonlinear Analysts (Tampa, 1992, U.S.A.)
17. First International Conference on Neural, Parallel and Scientific Computations (Atlanta 1995, U.S.A.)
19. General Inequalities 7 (Oberwolfach 1995, Germany)
20. International Workshop on Difference and Differential Inequalities (Gebze, 1996, Turkey)
23. EQUADIFF 9 (Brno 1997, Czechoslovakia)
27. Third World Congress of Nonlinear Analysts (Catania, 2000, Italy)
28. Sixth International Conference on Difference Equations and Applications (Augsburg, 2001, Germany)
31. Fourth World Congress of Nonlinear Analysts (Orlando, 2004, USA)
32. The 24th Annual Southeastern-Atlantic Regional Conference on Differential Equations (University of Tennessee at Chattanooga, 2004, USA)
33. Fifth International Conference on Dynamic Systems and Applications (Atlanta 2007, U.S.A.)
34. Fifth World Congress of Nonlinear Analysts (Orlando, 2008, USA)
35. Boundary Value Problems (Santiago de Compostela, 2008, Spain)
37. EQUADIFF 12 (Brno 2009, Czech Republic)
38. International Conference on Differential and Difference Equations and Applications (Ponta Delgada 2011, Portugal)
40. 11th International Workshop on Dynamical Systems and Applications (Ankara 2012, Turkey)
41. The International Conference on Mathematical Inequalities and Nonlinear Functional Analysis with Applications (Cinju 2012, Korea)
42. Southeastern–Atlantic Regional Conference on Differential Equations (Georgia Southern University, USA)
43. International Conference on Applied Analysis and Mathematical Modelling (Istanbul 2013, Turkey)
44. International Conference on Anatolian Communications in Nonlinear Analysis (Bolu 2013, Turkey)

Colloquium Talks: Several Colloquium talks delivered at the following centers

1. Universität Karlsruhe (Germany, 1979)
2. der Universität München (Germany, 1979)
3. Georg - August - Universität Göttingen (Germany, 1980)
4. Universität Stuttgart (Germany, 1980)
5. Mathematisch Centrum Amsterdam (Holland, 1980)
6. University Van Amsterdam (Holland, 1980)
7. Universita Degli Studi Di Parma (Italy, 1980)
8. Universita Degli Studi Di Firenze (Italy, 1980)
9. University of Ioannina (Greece, 1980)
10. Universitaet Karlsruhe (Germany, 1981)
11. der Universitaet Muenchen (Germany, 1981)
12. Technische Hochschule Darmstadt (Germany, 1981)
13. Universitat Osnabrueck (Germany, 1981)
14. Universitaet Hannover (Germany, 1981)
15. Universita Degli Studi Di Firenze (Italy, 1982)
16. Georg - August - Universitaet Goettingen (Germany, 1983)
17. Johann Wolfgang Goethe - Universitaet Frankfurt (Germany, 1983)
18. Albert - Ludwigs - Universitaet Freiburg (Germany, 1983)
19. der Universitaet Tuebingen (Germany, 1983)
20. Universita Degli Studi Di Trieste (Italy, 1983)
21. Universita Degli Studi Di Trento (Italy, 1983)
22. J. E. Purkne University Brno (Czechoslovakia, 1983)
23. Comenius University Bratislava (Czechoslovakia, 1983)
24. The University of Manitoba (Canada, 1983)
25. The University of Manitoba (Canada, 1986)
26. Scuola Normale Superiore, Pisa (Italy, 1987)
27. Politecnica di Milano (Italy, 1987)
28. Rheinisch - Westfaelische Technische Hochschule Aachen (Germany, 1989)
29. Universitaet Karlsruhe (Germany, 1989)
30. der Universitaet Muenchen (Germany, 1989)
31. Georg - August - Universitaet Goettingen (Germany, 1989)
32. Johann Wolfgang Goethe - Universitaet Frankfurt (Germany, 1989)
33. University of Western Australia (Australia, 1989)
34. Murdoch University (Australia, 1989)
37. The University of Sussex (U.K. 1989)
38. The University of Liverpool (U.K. 1989)
41. Oxford University (U.K. 1989)
42. University of Saskatchewan (Canada, 1991)
43. The University of Tokyo (Japan, 1991)
44. Tohoku University (Japan, 1991)
45. Nagoya University (Japan, 1991)
46. Ehime University (Japan, 1991)
47. Okayama University (Japan, 1991)
48. Kagoshima University (Japan, 1991)
49. Hiroshima University (Japan, 1991)
50. RIMS, Kyoto University (Japan, 1991)
51. der Universitaet Muenchen (Germany, 1995)
52. Universita Degli Studi Di Firenze (Italy, 1995)
53. Universita Degli Studi Di Trieste (Italy, 1995)
54. Scuola Normale Superiore, Pisa (Italy, 1995)
55. Politecnica di Milano (Italy, 1995)
56. Universita Degli Studi Di Roma (Italy, 1995)
57. Universita Degli Studi Di Bologna (Italy, 1995)
58. SISSA, Trieste (Italy, 1995)
59. Universit"at Augsburg (Germany, 1995)
60. Institute of Mathematics, Ukrainian Acad. Sci, Kiev (Ukraine, 1997)
61. University of Nebraska, Lincoln, Nebraska (USA, 1997)
62. Auburn University, Auburn, Alabama (USA, 1997)
63. Washington University, St. Louis (USA, 1997)
64. Wake Forest University, Winston Salem (USA, 1998)
65. Florida Institute of Technology, Melbourne (USA, 1998)
66. University of Central Florida, Orlando (USA, 1998)
67. North Carolina State University, Raleigh (USA, 1998)
68. San Diego State University, San Diego (USA, 1998)
69. University of Southern California, Los Angeles (USA, 1998)
70. University of Missori, Rolla (USA, 2000)
71. The University of Queensland, (Australia, 2000)
72. University of Delaware, (USA 2000)
73. Georgia Institute of Technology, (USA, 2000)
74. Auburn University, Auburn, Alabama (USA, 2005)
75. The Hong Kong Polytechnic University, (Hong Kong, 2006)
76. The University of Hong Kong, (Hong Kong, 2006)
77. City University of Hong Kong, (Hong Kong, 2006)
78. Howard University, (USA, 2006)
79. Georgetown University, (USA, 2006)
80. Western Kentucky University, (USA, 2006)
81. Michigan Technological University, (USA, 2007)
82. University of Rome, (Italy, 2008)
83. Politecnica di Milano (Italy, 2008)
84. Seattle University (USA, 2009)
85. King Fahd University of Petroleum and Minerals (Saudi Arabia, 2009)
86. Istanbul Technical University (Turkey, 2009)
87. Middle East Technical University (Turkey, 2009)
88. Cankaya University (Turkey, 2009)
89. Osmangazi University (Turkey, 2009)
90. Izmir University (Turkey, 2009)
91. Universidadade De Santiago De Compostela (Spain, 2010)
92. King Abdulaziz University (Saudi Arabia, 2010)
93. American University of Sharjah (Sharjah, 2010)
94. United Arab Emirates University (Al-Ain, 2010)
95. King Fahd University of Petroleum and Minerals (Saudi Arabia, 2010)
96. King Abdulaziz University (Saudi Arabia, 2011)
97. King Fahd University of Petroleum and Minerals (Saudi Arabia, 2011)
98. Texas AM University-Corpus Christi (USA, 2012)
Contents

1  A New Class of Riemannian Manifolds
   Yavuz Selim Balkan 35

2  Estimating $MS-ARCH$ Models Using Recursive Method
   Ahmed Ghezal 36

3  Approximation by $q$-Durrmeyer type Polynomials in Compact Disks in the Case $q > 1$
   Nazim Idrisoglu Mahmudov 37

4  Finite Groups Whose Intersection Graphs are Planar
   Selcuk Kayacan 38

5  On Solving Some Functional Equations
   Dmitry V.Kruchinin and Vladimir V.Kruchinin 39

6  On Computing Some Topological Indices
   Mohamed Amine Boutiche 40

7  History Slip-Dependent Evolutionary Quasi-Variational Inequalities with Volterra Integral Term
   Nouiri Brahim 41

8  Approximation Properties of Weighted Kantorovich Type Operators in a Compact Disks
   Mustafa Kara and Nazim I.Mahmudov 42

9  A Derivative Formula Associated with Eisenstein Series
   Aykut Ahmet Agyunes 43

10 General Result on Viscoelastic Wave Equation with Degenerate Laplace Operator of Kirchhoff-Type in $\mathbb{R}^n$
    Zennir Khaled 44

11 Moore-Penrose Inverse and Partial Isometries
    Safa Menkad 45

12 Multiplicity Result for the Hamiltonian System
    Tacksun Jung and Q-Heung Choi 46

13 One-Parameter Apostol-Bernoulli Polynomials and Apostol-Euler Polynomials
    Veli Kurt 47

14 On $p$-Bernoulli Numbers
    Mourad Rahmani 48

15 The Roots of a Dual Split Quaternion
    Hesna Kabadayi 49

16 On Some Inequalities for Hadamard Product of Special Types of Matrices
    Seyda Ildan and Hasan Kose 50
17 Generalized Newton Transformation and its Application to Transversal Submanifolds
Abdelmalek Mohammed

18 Multiple Positive Solutions for Elliptic Singular Systems with Hardy Sobolev Exponents
Benmansour Safia

19 A Collocation Method for Solution of the Nonlinear Lane-Emden type Equations in Terms of Generalized Bernstein Polynomials
Ayşegül Akyüz-Daşcioğlu and Neşe İşler Acar

20 GALA and GADP2 Comparison for the Scheduling Problem of $R_m/S_{ijk}/C_{max}$
Duygu Yılmaz Eroğlu and H.Cenk Üzümutlu

21 Improved MIP Model for Parallel Machines’ Scheduling Problem
Duygu Yılmaz Eroğlu and H.Cenk Üzümutlu

22 Multiple Positive Solutions for Elliptic Singular Systems with Cafarelli Kohn Nirenberg Exponents
Matallah Atika

23 Positive Solution for a Singular Second-Order Discrete Three-Point Boundary Value Problem
Noor Halimatus Sa’diah Ismail and Mesliza Mohamed

24 Positive Solution to Fourth Order Three-Point Boundary Value Problem
M.Mohamed, M.S.M.Noorani, M.S.Jusoh, M.N.M.Fadzil and R.Saian

25 Existence of Positive Solutions for Non-Homogeneous BVPs of $p$-Laplacian Difference Equations
Fatma Tokmak and İlkay Yaslan Karaca

26 L2 Norm Deconvolution Algorithm Applied to Ultrasonic Phased Array Signal Processing
Abdessalem Benammar, Redouane Drai and Ahmed Khechida

27 Multi-Soliton Solutions for Non-Integrable Equations: Asymptotic Approach
Georgy A. Omel’yanov

28 On Interpolation Functions for the $q$-analogue of the Eulerian Numbers Associated with any Character
Mustafa Alkan and Yılmaz Simsek

29 Computation of $p$-values for Mixtures of Gaussians
Burcin Simsek and Satish Iyengar

30 Nonclassical Appell Polynomials
Rahime Dere and Yılmaz Simsek

31 Remarks on the Central Factorial Numbers
Yılmaz Simsek
32 Nodals Solutions of the Fourth Order Equations Involving Paneitz-Branson Operator with Critical Sobolev Exponent
Boughazi Hichem

33 Bilinear Multipliers of Weighted Wiener Amalgam Spaces and Variable Exponent Wiener Amalgam Spaces
Öznur Kulak and A.Turan Gürkanlı

34 Global Optimization Problem of Lipschitz Functions Using \( \alpha \)-Dense Curves
Djaouida Guettal and Mohamed Rahal

35 Estimating 2-D GARCH Models by Quasi-Maximum Likelihood
Soumia Kharfouchi

36 An Approach Using Stream Ciphers Algorithm for Speech Encryption and Decryption
Belmeguenai Aissa, Mansouri Khaled and Lashab Mohamed

37 A Generalized Statistical Convergence for Sequences of Sets via Ideals
Ömer Kişi and Ekrem Savaş

38 Some Embedding Questions for Weighted Difference Spaces
Leili Kussainova and Ademi Ospanova

39 On \((\lambda, I)\)–Statistical Convergence of Order \(\alpha\) of Sequences of Function
Hacer Şengül and Mikail Et

40 Range Kernel Orthogonality of Generalized Derivations
Messaoudene Hadia

41 On Stancu Variant of \(q\)-Baskakov-Durrmeyer Type Operators
P.N.Agrawal and A.Sathish Kumar

42 Generalised Baskakov Kantorovich Operators
P.N.Agrawal and Meenu Goyal

43 Approximate Solutions of Fractional Order Boundary Value Problems by a Novel Method
Ali Akgul

44 Some Power Series on Archimedean and Non-Archimedean Fields
Fatma Çalışkan

45 Existence and Monotone Iteration of Symmetric Positive Solutions for Integral Boundary-Value Problems with \(\phi\)-Laplacian Operator
Tugba Senlik and Nuket Aykut Hamal

46 Analytical Calculation of Partial Differential Equations Applied to Electrical Machines With Ideal Halbach Permanent Magnets
Mourad Mordjaoui, Ibtissam Bouloukza and Dib Djalel

47 Principal Functions of Differential Operators with Spectral Parameter in Boundary Conditions
Nihal Yokuş
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>48</td>
<td>Generalized Typically Real Functions</td>
<td>S. Kanas and A. Tatarczak</td>
</tr>
<tr>
<td>49</td>
<td>The Abel-Poisson Summability of Fourier Series in a Banach Space with Respect to a Continuous Linear Representation</td>
<td>Seda Öztürk</td>
</tr>
<tr>
<td>50</td>
<td>Existence of Solutions for Integral Boundary Value Problems in Banach Spaces</td>
<td>Fulya Yoruk Deren and Nuket Aykut Hamal</td>
</tr>
<tr>
<td>51</td>
<td>Existence and Uniqueness Solution of Electro-Elastic Antiplane Contact Problem with Friction</td>
<td>Mohamed Dalah, Khoudir Kibeche, Amar Megrous, Ammar Derbazi and Soumia Ahmed Chau- uche</td>
</tr>
<tr>
<td>52</td>
<td>Almost Convex Valued Perturbation to Time Optimal Control Sweeping Processes</td>
<td>Doria Affane and Dalila Azzam-Laouir</td>
</tr>
<tr>
<td>53</td>
<td>Evolution Problem Governed by Subdifferential Operator</td>
<td>Mustapha Yarou</td>
</tr>
<tr>
<td>54</td>
<td>Nonlinear Elliptic Problem Related to the Hardy Inequality with Singular Term at the Boundary</td>
<td>B. Abdellaoui, K. Biroud, J. Davila and F. Mahmoudi</td>
</tr>
<tr>
<td>55</td>
<td>On Periodic Solutions of Nonlinear Differential Equations in Banach Spaces</td>
<td>Abdullah Çavuş, Djavvat Khadjiev and Seda Öztürk</td>
</tr>
<tr>
<td>56</td>
<td>Generalized $\alpha$-$\psi$-Contractive type M Mappings of Integral Type</td>
<td>Erdal Karapinar, P. Shahi and Kenan Tas</td>
</tr>
<tr>
<td>57</td>
<td>Caristi’s Fixed Point Theorem in Fuzzy Metric Spaces</td>
<td>Hamid Mottaghi Golshan</td>
</tr>
<tr>
<td>58</td>
<td>Determination of the Unknown Coefficient in Time Fractional Parabolic Equation with Dirichlet Boundary Conditions</td>
<td>Ebru Özbilge and Ali Demir</td>
</tr>
<tr>
<td>59</td>
<td>On $p$-adic Ising Model with Competing Interactions on the Cayley Tree</td>
<td>Farrukh Mukhamedov, Hasan Akin and Mutlay Dogan</td>
</tr>
<tr>
<td>60</td>
<td>A Spectral Domain Computational Technique Dedicated to Fault Detection in Induction Machine</td>
<td>A. Medoued, A. Lebaroud, O. Boudebbouz and D. Sayad</td>
</tr>
<tr>
<td>61</td>
<td>Some Results on Double Fuzzy Topogenous Orders</td>
<td>Vildan Çetkin and Halis Aygün</td>
</tr>
<tr>
<td>62</td>
<td>Finding Fixed Points of Firmly Nonexpansive-Like Mappings in Banach Spaces</td>
<td>Fumiaki Kohsaka</td>
</tr>
<tr>
<td>63</td>
<td>A Fourth Order Accurate Approximation of the First and Pure Second Derivatives of the Laplace Equation on a Rectangle</td>
<td>A. A. Dosiyev and H. M. Sadeghi</td>
</tr>
<tr>
<td>Page</td>
<td>Title</td>
<td>Authors</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>64</td>
<td>On the Positive Solutions for the Boundary Value Problems at Resonance</td>
<td>Ummahan Akcan and Nuket Aykut Hamal</td>
</tr>
<tr>
<td>65</td>
<td>On Weighted Approximation of Multidimensional Singular Integrals</td>
<td>Gumrah Uysal and Ertan Ibikli</td>
</tr>
<tr>
<td>66</td>
<td>On Hermite-Hadamard Type Inequalities for $\varphi$-Convex Functions via Fractional Integrals</td>
<td>Mehmet Zeki Sarikaya and Hatice Yaldız</td>
</tr>
<tr>
<td>67</td>
<td>Behavior of Positive Solutions of a Multiplicative Difference Equation</td>
<td>Durhasan Turgut Tollu, Yasin Yazlık and Necati Tagkara</td>
</tr>
<tr>
<td>68</td>
<td>A New Generalization of the Midpoint Formula for $n$-Time Differentiable Mappings which are Convex</td>
<td>Çetin Yıldız and M. Emin Özdemir</td>
</tr>
<tr>
<td>69</td>
<td>Global Bifurcations of Limit Cycles in the Classical Lorenz System</td>
<td>Valery Gaiko</td>
</tr>
<tr>
<td>70</td>
<td>Curvature of Curves Parameterized by a Time Scale</td>
<td>Sibel Paşalı Atmaca and Ömer Akgül</td>
</tr>
<tr>
<td>71</td>
<td>Essential Norms of Products of Weighted Composition Operators and Differentiation Operators Between Banach Spaces of Analytic Functions</td>
<td>Jasbir S. Manhas and Ruhan Zhao</td>
</tr>
<tr>
<td>72</td>
<td>On the Null Forms, Integrating Factors and First Integrals to Path Equations</td>
<td>Ilker Burak Giresunlu and Emrullah Yaşar</td>
</tr>
<tr>
<td>73</td>
<td>Commutativity of Lommel and Halm Differential Equations</td>
<td>Mehmet Emir Koksal</td>
</tr>
<tr>
<td>74</td>
<td>Equivalence Between Some Iterations in $CAT(0)$ Spaces</td>
<td>Kyung Soo Kim</td>
</tr>
<tr>
<td>75</td>
<td>On Certain Combinatoric Convolution Sums of Divisor Functions</td>
<td>Daeyeoul Kim and Nazli Yildiz Ikikardes</td>
</tr>
<tr>
<td>76</td>
<td>Some Properties of the Genocchi Polynomials with the Variable $[x]_q$</td>
<td>J.Y.Kang and C.S.Ryoo</td>
</tr>
<tr>
<td>77</td>
<td>Boundedness of Localization Operators on Lorentz Mixed Normed Modulation Spaces</td>
<td>Ayşe Sandıkçı</td>
</tr>
<tr>
<td>78</td>
<td>$p$-Summable Sequence Spaces with Inner Products</td>
<td>Şükran Konca, Hendra Gunawan and Mohammad Idris</td>
</tr>
<tr>
<td>79</td>
<td>An Alternative Proof of a Tauberian Theorem for Abel Summability Method</td>
<td>Ibrahim Çanak and Umit Totur</td>
</tr>
<tr>
<td>80</td>
<td>Positive Periodic Solutions for a Nonlinear First Order Functional Dynamic Equation by a New Periodicity Concept on Time Scales</td>
<td>Erbil Çetin and F. Serap Topal</td>
</tr>
</tbody>
</table>
81 Potential Flow Field Around a Torus
Rajai Alassar

82 On $B^{-1}$-Convex Functions and Some Inequalities
Gabil Adilov and Ilknur Yesilce

83 On the Global Behaviour of a Higher Order Difference Equation
Yasin Yazlık, D.Turgut Tollu and Necati Taskara

84 Identifying an Unknown Time Dependent Coefficient for Quasilinear Parabolic Equations
Fatma Kanca and Irem Baglan

85 On Special Semigroup Classes and Congruences on Some Semigroup Constructions
Seda Öğuz and Eylem Güzel Karpuz

86 The Rate of Pointwise Convergence of $q$–Szász Operators
Tuncer Acar

87 Some Properties of Cohomology Groups for Graphs
Özgür Ege and İsmet Karaca

88 Stability with Respect to Initial Time Difference for Generalized Delay Differential Equations
Ravi Agarwal and Snežana Hristova

89 On Ramanujan’s Summation Formula, his General Theta Function and a Generalization of the Borweins’ Cubic Theta Functions
Chandrashekar Adiga

90 $L^\infty$ Error Estimate of Parabolic Variational Inequality Arising of the Pricing of American Option
S.Madi, M.Hariour and M.C.Bouras

91 The Smoothness of Convolutions of Zonal Measures on Compact Symmetric Spaces
Sanjiv Kumar Gupta and Kathryn Hare

92 A Tauberian Theorem for the Weighted Mean Method of Summability of Sequences of Fuzzy Numbers
Zerrin Ünder, Sefa Anıl Sezer and İbrahim Çanak

93 Asymptotic Constancy for a System of Impulsive Delay Differential Equations
Fatma Karakoç and Hüseyin Bereketoğlu

94 An Extension $w$ with $\text{rank}_w = 3$ of a Valuation $v$ on a Field $K$ with $\text{rank}_v = 2$ to $K(x)$
Figen Öke

95 Inclusions Between Weighted Orlicz Space
Alen Osançlıol

96 On the Some Graph Parameters for Special Graphs
Nihat Akgünüş, Ahmet Sinan Çevik and İsmail Naci Cangül
97 A Note on the Dirichlet-Neumann First Eigenvalue of a Family of Polygonal Domains in $\mathbb{R}^2$
A.R.Aithal and Acushla Sarswat

98 An Approach to the Numerical Verification of Solutions for Variational Inequalities
C.S.Ryoo

99 Local Rings and Projective Coordinate Spaces
Fatma Özen Erdoğan and Süleyman Çiftçi

100 An Improved Numerical Solution of the Singular Boundary Integral Equation of the Compressible Fluid Flow Around Obstacles Using Modified Shape Functions
Luminita Grecu

101 New Aspects of Calculating Volumes in $\mathbb{R}^n$
Daniela Bittnerová and Daniela Bímová

102 Applications of an Alternative Methods for Volumes of Solids of Revolution
Daniela Bímová and Daniela Bittnerová

103 On Certain Sums of Fibonomial Coefficients
Emrah Kılıç and Aynur Yalçınner

104 Null Generalized Helices of a Null Frenet Curve in $L^4$
Esen Iyigün

105 Geometrical Methods and Numerical Computations for Prey-Predator Lotka-Volterra Systems
Adela Ionescu, Romulus Militaru and Florian Munteanu

106 Fractional Calculus Model of Dengue Epidemic
Moustafa El-Shahed

107 Zagreb Co Indices and Augmented Zagreb Index and its Polynomials of Phenylene and Hexagonal Squeeze
P.S.Ranjini, V.Lokesha and Usha.A

108 A Note on Class Numbers of Real Quadratic Fields with Certain Fundamental Discriminants
Ayten Pekin

109 On Three Dimensional Dynamical Systems on Time Scales
Elvan Akın

110 On the Difference Equation System $x_{n+1} = \frac{1+y_n}{x_n}$, $y_{n+1} = \frac{1+y_n}{x_n}$
Necati Taskara, Durhasan Turgut Tollu and Yasin Yazlık

111 The Binomial Transforms of Tribonacci and Tribonacci-Lucas Sequences
Nazmiye Yılmaz and Necati Taskara

112 On the Random Functional Central Limit Theorems with Almost Sure Convergence for Subsequences
Zdzisław Rychlik
113 Some Fixed Point Theorems for a Pair of Mappings in Complex Valued b-Metric Spaces
Aiman Mukheimer

114 Some Characterizations of Slant Curves on Unit Dual Sphere $\tilde{S}^2$
Seda Oral and Mustafa Kazaz

115 On Solving Some Partial Differential Equations
Ümit Sarp and Sebahattin Ikikardes

116 Some Spectrum Properties in $C^\ast$- Algebras
Nilay Sager and Hakan Avci

117 On Function Spaces with Fractional Fourier Transform in the Weighted Lebesgue Spaces
Erdem Toksoy and Ayşe Sandıkçı

118 Some Convergence Results for Modified SP-Iteration Scheme in Hyperbolic Spaces
Aynur Şahin and Metin Başarır

119 Characterization of $W^p$-type of Spaces Involving Fractional Fourier Transform
S.K. Upadhyay and Anuj Kumar

120 Rates of Convergence for an Estimator of a Density Function Based on Hermite Polynomials
Elif Erçelik and Mustafa Nadar

121 Estimation of Reliability in Multicomponent Stress-Strength Model Based on Marshall–Olkin Weibull Distribution
Mustafa Nadar and Fatih Kızılaslan

122 Some New Results on The II–Regularity of Some Monoids
Ahmet Emin and Firat Ateş

123 On Traveling Wave Solutions of Fractional Differential Equations
Şerife Müge Ege and Emine Mısırlı

124 On the Oscillation of Second Order Nonlinear Neutral Dynamic Equations on Time Scales
Elvan Akın, Can Murat Dikmen and Said Grace

125 A Collocation Approach to Parabolic Partial Differential Equations
Kubra Erdem Biçer and Salih Yalçınbaş

126 From Simplicial Homotopy to Crossed Module Homotopy
I. İlker Akça and Kadir Emir

127 On Algebraic Semigroup and Graph-Theoretic Properties of a New Graph
Ahmet Sinan Çevik, Eylem Güzel Karpuz and I. Naci Cangül

128 Embeddability and Gröbner-Shirshov Basis Theory
Eylem Güzel Karpuz
<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>129</td>
<td>An Application of Fixed Point Theorems to a Problem for the Existence of Solutions of a Nonlinear Ordinary Differential Equations of Fractional Order</td>
<td>Masashi Toyoda</td>
<td>163</td>
</tr>
<tr>
<td>130</td>
<td>A Numerical Solution for Vibrations of an Axially Moving Beam</td>
<td>Duygu Dönmec Demir and Erhan Koca</td>
<td>164</td>
</tr>
<tr>
<td>131</td>
<td>Some Principal Congruence Subgroups of the Extended Hecke Groups and Relations with Pell-Lucas Numbers</td>
<td>Zehra Sarıgedik, Sebahattin İkikardeş and Recep Şahin</td>
<td>165</td>
</tr>
<tr>
<td>132</td>
<td>On the Metric Geometry and Regular Polyhedrons</td>
<td>Temel Ermiş and Rüstem Kaya</td>
<td>166</td>
</tr>
<tr>
<td>133</td>
<td>On the Addition of Collinear Points in Some PK-Planes</td>
<td>Basri Celik and Abdurrahman Dayıoğlu</td>
<td>167</td>
</tr>
<tr>
<td>134</td>
<td>Local Stability Analysis of Strogatz Model with Two Delays</td>
<td>Sertaç Erman and Ali Demir</td>
<td>168</td>
</tr>
<tr>
<td>135</td>
<td>Weighted Statistical Convergence in Tüntüncül Fuzzy Normed Spaces</td>
<td>Selma Altunay and Esra Kamber</td>
<td>169</td>
</tr>
<tr>
<td>136</td>
<td>Sturm Comparison Theorems for Some Elliptic Type Equations with Damping and External Forcing Terms</td>
<td>Sinem Şahiner, Emine Mısırlı and Aydın Tiryaki</td>
<td>170</td>
</tr>
<tr>
<td>137</td>
<td>A Note on Solutions of the Nonlinear Fractional Differential Equations via the Extended Trial Equation Method</td>
<td>Meryem Odabası and Emine Mısırlı</td>
<td>171</td>
</tr>
<tr>
<td>138</td>
<td>On Quantum Codes Obtained From Cyclic Codes Over $F_2 + uF_2 + u^2F_2 + \cdots + u^m F_2$</td>
<td>Abdullah Dertli, Yasemin Cengellenmiş and Şenol Eren</td>
<td>172</td>
</tr>
<tr>
<td>139</td>
<td>On Some Functions Mapping the Zeros of $L_n(x)$ to the Zeros of $L'_n(x)$</td>
<td>Nihal Yılmaz Özgür and Öznur Üztünç</td>
<td>173</td>
</tr>
<tr>
<td>140</td>
<td>Finite Blashcke Products and R-Bonacci Polynomials</td>
<td>Nihal Yılmaz Özgür, Öznur Üztünç and Süleyra Uçar</td>
<td>174</td>
</tr>
<tr>
<td>141</td>
<td>Convergence of Nonlinear Singular Integral Operators to the Borel Differentiable Functions</td>
<td>Harun Karslı and Ismail U. Tiryaki</td>
<td>175</td>
</tr>
<tr>
<td>142</td>
<td>Regularization of an Abstract Class of Ill-Posed Problems</td>
<td>Djezzar Salah and Benmerai Romaissa</td>
<td>176</td>
</tr>
<tr>
<td>143</td>
<td>Decompositions of Soft Continuity</td>
<td>Ahu Açıkgoz and Nihal Taş</td>
<td>177</td>
</tr>
<tr>
<td>144</td>
<td>Lacunary Statistical Convergence of Double Sequences in Topological Groups</td>
<td>Ekrem Savaş</td>
<td>178</td>
</tr>
</tbody>
</table>
145 On Fuzzy Pseudometric Spaces  
Elif Aydin and Servet Kütkükü  

146 On Fixed Points of Extended Hecke Groups  
Bilal Demir and Özden Koroğlu  

147 New Lagrangian Forms of Modified Emden Equation by Jacobi Method  
Gülden Gün Polat and Teoman Özer  

148 Fixed Point Theorems for $\psi$-Contractive Mappings on Modular Space  
Ekber Girgin and Mahpeyker Öztürk  

149 Convexity and Schur Convexity on New Means  
V. Lokesha, U. K. Misra and Sandeep Kumar  

150 On Radial Signed Graphs  
Gurunath Rao Vaidya, P. S. K. Reddy and V. Lokesha  

151 Delta and Nabla Discrete Fractional Grüss Type Inequality  
A. Feza Güvenilir  

152 On Tame Extensions and Residual Transcendental Extensions of a Valuation with $\text{rank}_v = n$  
Burcu Öztürk and Figen Üke  

153 Time Series Forecasting with Grey Modelling  
Seval Ene and Nursel Öztürk  

154 Periodic Solution of Predator-Prey Dynamic Systems with Beddington-DeAngelis Type Functional Response and Impulses  
Ayşe Feza Güvenilir, Billur Kaymakçalan and Neslihan Nesliye Pelen  

155 Approximation Properties of Kantorovich-Stancu Type Generalization of $q$-Bernstein-Schurer-Chlodowsky Operators on Unbounded Domain  
Tuba Vedi and Mehmet Ali Özarslan  

156 Use of Golden Section in Music  
Sümeyye Bakım  

157 On Analysis of Mathews-Lakshmanan Oscillator Equation via Nonlocal Transformation and Lagrangian-Hamiltonian Description  
Özlem Orhan and Teoman Özer  

158 On Singularities of the Galilean Spherical Darboux Ruled Surface of a Space Curve in the Pseudo-Galilean Space $G^1_{13}$  
Tevfik Şahin and Murteza Yılmaz  

159 Existence of Positive Solutions for Second Order Semipositone Boundary Value Problems on the Half-Line  
F. Serap Topal and Gülşah Yeni  

160 Some Congruent Number Families  
Refik Keskin and Ümmügülüm Öğüt
<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>161</td>
<td>On Some Fourth-Order Diophantine Equations</td>
<td>Merve Güney Duman and Refik Keskin</td>
<td>195</td>
</tr>
<tr>
<td>162</td>
<td>Characteristic Subspaces of Finite Rank Operators</td>
<td>Mohamed Najib Ellouze</td>
<td>196</td>
</tr>
<tr>
<td>163</td>
<td>Fixed Point Theory in WC-Banach Algebras</td>
<td>Bilel Mefteh</td>
<td>197</td>
</tr>
<tr>
<td>164</td>
<td>Oscillation and Nonoscillation Criteria for Second Order Generalized Difference Equations</td>
<td>Yaşar Bolat</td>
<td>198</td>
</tr>
<tr>
<td>165</td>
<td>On Generalizations of Some Inequalities Containing Diamond-Alpha Integrals and Applications</td>
<td>Billur Kaymakçalan</td>
<td>199</td>
</tr>
<tr>
<td>166</td>
<td>On Reciprocity Law of the $Y(h,k)$ Sums Associated with PDE's of the Three-Term Polynomial Relations</td>
<td>Elif Cetin, Yılmaz Simsek and Ismail Naci Cangul</td>
<td>200</td>
</tr>
<tr>
<td>167</td>
<td>Permutation Method for a Class of Singularly Perturbed Discrete Systems with Time-Delay</td>
<td>Tahia Zerizer</td>
<td>201</td>
</tr>
<tr>
<td>168</td>
<td>Existence of Minimal and Maximal Solutions for Quasilinear Elliptic Equation with Nonlocal Boundary Conditions on Time-Scales</td>
<td>Mohammed Derhab and Mohammed Nehari</td>
<td>202</td>
</tr>
<tr>
<td>169</td>
<td>Application of Filled Function Method in Chemical Control of Pests</td>
<td>Ahmet Şahiner, Meryem Öztop, Gülden Kapusuz and Ozan Demirözer</td>
<td>203</td>
</tr>
<tr>
<td>170</td>
<td>A New Approach to the Filled Function Method for Non-smooth Problems</td>
<td>Nurullah Yılmaz and Ahmet Şahiner</td>
<td>204</td>
</tr>
<tr>
<td>171</td>
<td>Determining of the Achievement of Students by Using Classical and Modern Optimization Techniques</td>
<td>Ahmet Şahiner and Raziye Akbay</td>
<td>205</td>
</tr>
<tr>
<td>172</td>
<td>Fuzzy Logic Approach to an UH-1 Helicopter Fuel Consumption and Calculation of Power Problem</td>
<td>Ahmet Şahiner and Reyhane Ercan</td>
<td>206</td>
</tr>
<tr>
<td>173</td>
<td>Determination of Effects of Brassinosteroid Applications on Secondary Metabolite Accumulation in Salt Stressed Peppermint (Mentha piperita L.) by Modern Optimization Techniques</td>
<td>Ahmet Sahiner, Tuba Yigit, Ozkan Coban and Nilgun Gokturk Baydar</td>
<td>207</td>
</tr>
<tr>
<td>174</td>
<td>On a Completeness Property of $C(X)$ Equipped with a Set-Open Topology</td>
<td>Smail Kelaiaia</td>
<td>208</td>
</tr>
<tr>
<td>175</td>
<td>Existence of Solutions of a Class of Second Order Differential Inclusions</td>
<td>D.Azzam-Laouir and F.Aliouane</td>
<td>209</td>
</tr>
</tbody>
</table>
176 Applications of Generalized Fibonacci Autocorrelation Sequences \( \{ \Gamma_{k,n}(\tau) \}_{\tau}^{\infty} \)
Sibel Koparal and Neşe Ömür

177 The Computer Simulation of Nuclear Magnetic Resonance Hyperfine Structure Constant for \( AB_2, A_2B_2 \) and \( A_2B_3 \) Systems Containing Some Organic Molecules with Spin \( \frac{1}{2} \) Using Jacobi Programme
Hüseyin Ovalıoğlu, Adnan Kılıç and Handan Engin Kırımlı

178 The Computer Simulation of Nuclear Magnetic Resonance Hyperfine Structure Constant for \( ANX, ABC \) and \( A_3BC \) Systems Containing Some Organic Molecules with Spin \( \frac{1}{2} \) Using Jacobi Programme
Hüseyin Ovalıoğlu, Handan E.Kırımlı, Cengiz Akay and Adnan Kılıç

179 Necessary and Sufficient Conditions for First Order Differential Operators to be Associated with a Disturbed Dirac Operator in Quaternionic Analysis
Uğur Yüksel

180 Theoretical Investigation of Substituent Effect on the Carbonyl Stretching Vibration
Ilhan Küçük and Aslı Ayten Kaya

181 Modeling of the Optical Properties of the CdS Thin Films by Using Artificial Neural Network
Aslı Ayten Kaya, Kadir Ertürk, Nil Küçük and İlker Küçük

182 Nonprinciple Solutions and Extensions of Wong’s Oscillation Criteria to Forced Second-Order Impulsive and Delay Differential Equations
Abdullah Özbekler and Açıcık Zafer

183 Modeling of Exposure Buildup Factors for Concrete Shielding Materials up to 10 mfp Using Generalized Feed-Forward Neural Network
Nil Kucuk, Vishwanath P.Singh and N.M.Badiger

184 Calculation of Gamma-Ray Exposure Buildup Factors for Some Biological Samples
Nil Kucuk, Vishwanath P.Singh and N.M.Badiger

185 Determination of Thermoluminescence Kinetic Parameters of \( \text{ZnB}_2\text{O}_4 : \text{La} \) Phosphors
Nil Kucuk, A.Halit Gozel, Mustafa Topaksu and Mehmet Yüksel

186 Improved Numerical Radius and Spectral Radius Inequalities for Operators
Fuad Kittaneh and Amer Abu-Omar

187 n-Dimensional Sobolev type spaces involving Chebli-Trimeche Transform
Mourad Jelassi

188 A Fixed Point Theorem for Multivalued Mappings with \( \delta \)-Distance on Complete Metric Space
Özlem Acar and İshak Altun

189 Existence of Solutions of \( \alpha \in [2,3] \) Order Fractional Three Point Boundary Value Problems with Integral Conditions
Sinem Unul and N.I.Mahmudov

190 Vector-Valued Variable Exponent Amalgam Spaces
Ismail Aydın
191 Soliton Solutions of Sawada–Kotera Equation by Hirota Method
Esra Karataş and Mustafa Inc

192 Certain Quasi-Cyclic Codes which are Hadamard Codes
Mustafa Özkan and Figen Öke

193 Pointwise Convergence of Derivatives of New Baskakov-Durrmeyer-Kantorovich Type Operators
Gulsum Ulusoy, Ali Aral and Emre Deniz

194 On the High Order Lipschitz Stability of Inverse Nodal Problem for String Equation
Emrah Yılmaz and Hikmet Koyunbakan

195 Positive Solutions of a Boundary Value Problem with Derivatives in the Nonlinear Term
Patricia J.Y. Wong

196 One Step Iteration Scheme for Two Multivalued Mappings in CAT(0) Spaces
Izhar Uddin and M. Imdad

197 A Variant Akaike Information Criterion for Mixture Autoregressive Model Selection
Fayçal Hamdi

198 Zagreb Polynomials of Three graph Operators
A.R. Bindusree, V. Lokesha, I. Naci Cangul and P.S. Ranjini

199 A Note on the Moment Estimate for Stochastic Functional Differential Equations
Young-Ho Kim

200 Issues Optimization of Public Administration
Canybec Sulayman and Gulnar Suleymanova

201 Jacobi Orthogonal Approximation with Negative Integer and its Application
Zhang Xiao-yong and Wan Zheng-su

202 Existence Results for Nonlinear Impulsive Fractional Differential Equations with $p$–Laplacian Operator
Ilkay Yaslan Karaca and Fatma Tokmak

203 A Relation Between the Lefschetz Fixed Point Theorem and the Nielsen Fixed Point Theorem in Digital Images
Ismet Karaca

204 Second Order Nonlinear Boundary Value Problems with Integral Boundary Conditions on Time Scales
F. Serap Topal and Arzu Denk Oguz

205 Existence of a Solution of Integral Equations via Fixed Point Theorem
Selma Gültyaz

206 Triangular and Square Triangular Numbers
Arzu Özkoç
207 Approximation Methods on a Complete Geodesic Space
Yasunori Kimura

208 Fixed Point Results for $\alpha$-Admissible Multivalued $F$-Contractions
Gonca Durmaz and Ishak Altun

209 Advances on Fixed Point Theory
Erdal Karapinar

210 Fixed Point Theorems for a Class of $\alpha$-Admissible Contractions and Applications to Boundary Value Problem
Inci M. Erhan

211 Feng-Liu Type Fixed Point Theorems for Multivalued Mappings
Gülhan Mınak and Ishak Altun

212 Qualitative Analysis for the Differential Equation Associated to the Dynamic Model for an Access Control Structure
Daniela Coman, Adela Ionescu and Sonia Degeratu

213 Zagreb Indices of Double Graphs
Aysun Yurttas, Muge Togan and Ismail Naci Cangul

214 Several Zagreb Indices of Subdivision Graphs of Double Graphs
Muge Togan, Aysun Yurttas and Ismail Naci Cangul

215 On the Solutions of the Diophantine Equation $x^n + p \cdot y^n = p^2 \cdot z^n$
Caner Ağaoğlu and Musa Demirci

216 A Weak Contraction Principle in Partially Ordered Cone Metric Space with Three Control Functions
Binayak S. Choudhury, L. Kumar, T. Som and N. Metiya

217 On the Diophantine Equation $(20n)^2 + (99n)^2 = (101n)^2$
Gokhan Soydan, Musa Demirci and Ismail Naci Cangul

218 Halpern Type Iteration with Multiple Anchor Points in a Hadamard Space
Yasunori Kimura and Hideyuki Wada

219 Multimaps in Fixed Point Theorems in Terms of Measure of Noncompactness
Mehdi Asadi

220 Pointwise Approximation in $L^p$ Space by Double Singular Integral Operators
Mine Menekşe Yılmaz, Gümrah Uysal and Ertan Ibikli

221 Some Tauberian Remainder Theorems for Iterations of Weighted Mean Methods of Summability
Sefa Anıl Sezer and Ibrahim Çanak

222 On The Semi-Fredholm Spectrum
Arzu Akgül

223 Critical Fixed Point Theorems in Banach Algebras Under Weak Topology Features
A. Ben Amar and A. Tlili
224 Modeling of Effect of the Components of Distance Education in Achievement of Students
Hamit Armagan, Tuncay Yigit and Ahmet Sahiner 258

225 On the Weighted Integral Inequalities for Convex Function
Mehmet Zeki Sarikaya and Samet Erden 259
1 A New Class of Riemannian Manifolds
Yavuz Selim Balkan

In this study, we introduce a new class of \((2n + 1)\)–dimensional Riemannian manifolds. Such type manifolds are called almost contact metric manifolds which have \(\varphi\)–recurrent \(\tau\)–curvature tensor. We investigate some curvature properties of this type manifold. We obtain that these manifolds are \(\eta\)–Einstein manifolds under some algebraic conditions.

References


2 Estimating MS – ARCH Models Using Recursive Method

Ahmed Ghezal

In this note we offer model more realistically the variability of financial time series. Markov-switching autoregressive conditional heteroskedasticity (MS – ARCH) model introduced by Cai that incorporates the features of both Hamilton and Engle ARCH model to study the matter of volatility persistence in the monthly excess revenues. The matter can be resolved by taking into account occasional transformations in the asymptotic variance of the MS – ARCH process that cause the Pseudomonas persistence of the volatility process. One of the interesting issues of financial time series volatility relates to the persistence of shocks to the variance. A common finding using high-frequency financial data concerns the apparent persistence implied by the estimates for the conditional variance functions. In these models, the parameters are allowed to depend on an unobservable time-homogeneous and stationary Markov chain with finite state space. The statistical inference for these models is rather difficult due to the dependence to the whole regime path. We propose a recursive algorithm for parameter estimation in MS – ARCH. The proposed method which is useful for long time series as well as for data available in real time. The main idea is to use the maximum likelihood estimation (MLE) method and from this develop a recursive Expectation-Maximization (EM) algorithm.

References


3 Approximation by $q$–Durrmeyer type Polynomials in Compact Disks in the Case $q > 1$

Nazim Idrisoğlu Mahmudov

In this talk, we discuss approximation properties of the complex $q$-Durrmeyer type operators in the case $q > 1$. Quantitative estimates of the convergence, the Voronovskaja type theorem and saturation of convergence for complex $q$-Durrmeyer type polynomials attached to analytic functions in compact disks will be given. In particular, we show that for functions analytic in $\{z \in \mathbb{C} : |z| < R\}$, $R > q$, the rate of approximation by the $q$-Durrmeyer type polynomials ($q > 1$) is of order $q^{-n}$ versus $1/n$ for the classical ($q = 1$) Durrmeyer type polynomials. Explicit formulas of Voronovskaya type for the $q$-Durrmeyer type operators for $q > 1$ are also given.

References


4 Finite Groups Whose Intersection Graphs are Planar
Selçuk Kayakan

The intersection graph of a group $G$ is an undirected graph without loops and multiple edges defined as follows: the vertex set is the set of all proper non-trivial subgroups of $G$, and there is an edge between two distinct vertices $H$ and $K$ if and only if $H \cap K \neq 1$ where 1 denotes the trivial subgroup of $G$. In this talk we characterize all finite groups whose intersection graphs are planar. Our methods are elementary. Among the graphs similar to the intersection graphs, we may count the subgroup lattice and the subgroup graph of a group, each of whose planarity was already considered before in [2, 10, 11, 12, 13].

References

5 On Solving Some Functional Equations
Dmitry V.Kruchinin and Vladimir V.Kruchinin

In this talk, we discuss some methods for solving functional equations based on generating functions. Particularly, using the notion of the composita and Lagrange inversion theorem, we present techniques for solving the following functional equation \( A(x) = G(x A(x)^\alpha) \), where \( A(x), G(x) \) are generating functions with \( G(0) \neq 0 \), and \( \alpha \) is any real number. Also we give some examples.

References


6 On Computing Some Topological Indices
Mohamed Amine Boutiche

The Wiener index of a graph $G = (V,E)$ defined as $W(G) = \sum_{u,v \in V(G)} d_G(u,v)$ where $d_G(u,v)$ is a distance between two vertices $u,v \in V(G)$ (the minimum number of edges on a path in $G$ between $u$ and $v$), was introduced by Harold Wiener in 1947. In this talk, we show how to compute some of well-known topological indices; the Wiener and the Wiener Polarity Index for Sun Graphs.

References


7 History Slip-Dependent Evolutionary Quasi-Variational Inequalities with Volterra Integral Term
Nouiri Brahim

In this talk, we present and analyze a class of history slip-dependent evolutionary quasi-variational inequalities with Volterra integral term. We prove the existence and uniqueness result, by using arguments of evolutionary variational inequalities with viscosity and Banach’s fixed-point theorem. Next, we study the dependence of the solution on the long-term memory and derive a convergence result. Finally, we present a number of concrete examples of frictional contact problems for which our results apply.

References


8 Approximation Properties of Weighted Kantorovich Type Operators in a Compact Disks

Mustafa Kara and Nazm I. Mahmudov

In this talk, we discuss approximation properties of the complex weighted Kantorovich Type operators. Quantitative estimates of the convergence, the Voronovskaja type theorem and saturation of convergence for complex weighted Kantorovich polynomials attached to analytic functions in compact disks will be given. In particular, we show that for functions analytic in \( \{z \in \mathbb{C} : |z| < R\} \), the rate of approximation by the weighted complex Kantorovich type operators is \( 1/n \).

References


9 A Derivative Formula Associated with Eisenstein Series
Aykut Ahmet AYGÜNEŞ

In this talk, we construct a new formula which derives the modular functions of weight $8k + 12$ by using the modular functions of weight $4k + 4$. Then we substitute Eisenstein series into our formula and we obtain some results. Also we investigate some properties of operators related to our derivative formula.

References
10 General Result on Viscoelastic Wave Equation with Degenerate Laplace Operator of Kirchhoff-Type in $\mathbb{R}^n$

Zennir Khaled

We shall give general energy decay of solutions to viscoelastic wave equations of $p-$Laplacian in Kirchhoff type. In order to compensate the lack of Poincare’s inequality in $\mathbb{R}^n$ and for wider class of relaxation functions, we are going to use weighted spaces.

References


11 Moore-Penrose Inverse and Partial Isometries
Safa Menkad

In this talk, we shall give a characterization of the class of all normal partial isometries, using a version of Corach-Porta-Recht inequality for Moore-Penrose invertible operators.

References
12 Multiplicity Result for the Hamiltonian System
Tacksun Jung and Q-Heung Choi

We get a theorem which shows the multiple weak solutions for the bifurcation problem of the superquadratic nonlinear Hamiltonian system. We obtain this result by using the variational method, the critical point theory in terms of the $S^1$-invariant functions and the $S^1$-invariant linear subspaces.

References


Kunsan National University, Department of Mathematics, Kunsan 573-701, Republic of Korea, tsjung@kunsan.ac.kr
Q-Heung Choi: Inha University, Department of Mathematics Education, Incheon 402-751, Republic of Korea, qheung@inha.ac.kr

This work (Tacksun Jung) was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education, Science and Technology (KRF-2010-0023985).
13 One-Parameter Apostol-Bernoulli Polynomials and Apostol-Euler Polynomials
Veli Kurt

In this work, we define one-parameter Apostol-Bernoulli polynomials $B^{(\beta)}_n(x; \alpha, \lambda)$ of order $\beta$ and one-parameter Apostol-Euleri polynomials $E^{(\beta)}_n(x; \alpha, \lambda)$ of order $\beta$, $\beta \in \mathbb{N}$. We prove some identities and relations between these polynomials. Also, we give different form analogue of the Srivastava-Pintér additional theorem for these polynomials.

References

14 On $p$-Bernoulli Numbers
Mourad Rahmani

In this talk, we define a new family of $p$-Bernoulli numbers which are derived from the Gaussian hypergeometric function, and we establish some basic properties. Furthermore, an algorithm for computing Bernoulli numbers based on three-term recurrence relation is given. A similar algorithm for Bernoulli polynomials is also presented.

References


15 The Roots of a Dual Split Quaternion
Hesna Kabadayi

In this paper, we express De Moivre’s formula for dual split quaternions and find roots of a dual split quaternion using this formula.

References


16 On Some Inequalities for Hadamard Product of Special Types of Matrices
Seyda Ildan and Hasan Köse

In this paper, we review some determinantal inequalities for Hadamard product of positive definite matrices, $M-$matrices and inverse $M-$matrices. Than we improve these inequalities for some special types of matrices.

References


17 Generalized Newton Transformation and its Application to Transversal Submanifolds
Abdelmalek Mohammed

In this paper, we study some properties of generalized Newton transformation $T_U$ of a family of endomorphisms. As application we establish a relation between the transversality of two submanifolds and ellipticity of $T_U$.

References


18 Multiple Positive Solutions for Elliptic Singular Systems with Hardy Sobolev Exponents
Benmansour Safia

In this work, we prove the existence of at least two positive solutions for an elliptic singular system of two weakly coupled equations with singular weights and critical Hardy Sobolev exponents. We use Mountain Pass theorem and Enkland’s variationnal principle.

References


19  A Collocation Method for Solution of the Nonlinear Lane-Emden type Equations in Terms of Generalized Bernstein Polynomials
Ayşegül Akyüz-Daşcıoğlu and Neşe İşler Acar

In this talk, a collocation method based on Bernstein polynomials defined on the interval \([a,b]\) is presented for approximate solution of the nonlinear Lane-Emden type equations that have an important place in astrophysics and mathematical physics. The proposed method reduces the solution of nonlinear problem to the solution of a system of linear algebraic equations iteratively by using quasilinearization technique and collocation points. Some numerical examples are given to illustrate the efficiency, validity and applicability of the method.

References


Ayşegül Akyüz-Daşcıoğlu: Pamukkale University, Faculty of Arts&Sciences, Department of Mathematics, Kimikl, Denizli-Turkey, aakyuz@pau.edu.tr
Neşe İşler Acar: Mehmet Akif Ersoy University, Faculty of Arts&Sciences, Department of Mathematics, İstiklal, Burdur-Turkey, nisi@mehtmetalif.edu.tr

This work is supported by Scientific Research Project coordination Unit of Pamukkale University, No:2012FBE036.
20 GALA and GADP2 Comparison for the Scheduling Problem of $R_m/S_{ijk}/C_{max}$

Duygu Yılmaz Eroğlu and H.Cenk Özmutlu

We presented GALA, which is hybrid local search algorithm for the scheduling problem with setup times that includes non-identical parallel machines. This problem type is studied by many of researcher and most of them compare their algorithms via datasets from literature. In this study, we will compare our study’s results with GADP2 (integrating the dominance properties with a genetic algorithm which is proposed by Chang and Chen (2011)) algorithm’s results using the same datasets. In spite of GALA’s local search is inspired from dominant properties method of GADP2, the results of GALA gives better result. This is probably caused by chromosome structure of GALA which is constituted by random numbers that are generated between 0 and 1.

References


21 Improved MIP Model for Parallel Machines’ Scheduling Problem

Duygu Yilmaz Eroğlu and H.Cenk Özmutlu

In this study, MIP model, which is developed for unrelated parallel machines, is improved and additional constraints that satisfies equal sub orders are added into the formulation. This research is motivated by a practical need at a loom scheduling. MIP helps us in this problem to validate the developed heuristics methods, using small scale data sets from literature. The comparison of the results of developed MIP model and heuristic algorithm shows effectiveness of presented algorithms. Job splitting is scarcely studied in the literature but needs more attention because of possible flexibility effects also on the other sectors (i.e logistics) besides scheduling.

References


In this work, we prove the existence of at least two positive solutions for an elliptic singular system of two weakly coupled equations with singular weights and critical Cafarelli Kohn Nirenberg exponents. We use Mountain Pass theorem and Eukland’s variational principle.

References


23 Positive Solution for a Singular Second-Order Discrete Three-Point Boundary Value Problem

Noor Halimatus Sa’diah Ismail and Mesliza Mohamed

Using the Krasnoselskii fixed point theorem, we prove the existence and multiplicity of positive solution for a singular three point boundary value problem

\[ \Delta^2 y(k - 1) + \lambda h(k)f(y(k)) = 0, \quad k \in \{1, \ldots, T\}, \]
\[ y(0) - \alpha \Delta y(0), \quad y(T + 1) = \beta y(n). \]

where \( f \) is singular at \( y = 0 \), \( \lambda > 0 \) and \( T \geq 3 \) is a fixed positive integer, \( n \in \{2, \ldots, T - 1\} \), constant \( \alpha, \beta > 0 \) such that \( H := T + 1 - \beta n + \alpha (1 - \beta) > 0 \), and \( T + 1 - \beta n > 0 \).

References


24 Positive Solution to Fourth Order Three-Point Boundary Value Problem

M. Mohamed, M. S. M. Noorani, M. S. Jusoh, M. N. M. Fadzil and R. Saian

This work concerned with the fourth order boundary value problem $u^{(4)}(t) + f(t, u(t), u'(t)) = 0$, $0 < t < 1$, subject to boundary conditions $u(0) = u''(0) = u''(1) = 0$ and $u''(0) - \alpha u''(\eta) = \lambda$ where $0 < \eta < 1$ and $\alpha \in [0, \frac{1}{2}]$ are constant and $\lambda \in [0, +\infty)$ is a parameter. By imposing a sufficient structure on the nonlinearity $f(t, u, u')$, we deduce the existence of at least one positive solution to the problem by applying the Krasnosel’skii fixed point theorem.

References


M. Mohamed (Corresponding author), Fakulti Sains Komputer & Matematik, Universiti Teknologi MARA (Pahang), 26400 Bandar Tun Abdul Razak, Jengka, Pahang, Malaysia, mesliza@pahang.uitm.edu.my

M. S. M. Noorani: Faculty of Science & Technology, School of Mathematical Sciences, Universiti Kebangsaan Malaysia, msn@ukm.my

M. S. Jusoh, Faculty of Civil Engineering, Universiti Teknologi MARA (Pahang), 26400 Bandar Tun Abdul Razak, Jengka, Pahang, Malaysia, mdsufian@pahang.uitm.edu.my

M. N. M. Fadzil, Fakulti Sains Komputer & Matematik, Universiti Teknologi MARA (Perlis), 02600 Arau, Perlis, Malaysia, mohamadnajib@perlis.uitm.edu.my

R. Saian:Fakulti Sains Komputer & Matematik, Universiti Teknologi MARA (Perlis), 02600 Arau, Perlis, Malaysia, rizauddin@perlis.uitm.edu.my

The authors thank to Ministry of Higher Education for Fundamental Research of Grant Sciences (600-RMI/FRGS5/3/Fst(9/2012))
25 Existence of Positive Solutions for Non-Homogeneous BVPs of $p$-Laplacian Difference Equations
Fatma Tokmak and Ilkay Yaslan Karaca

In this talk, by using Avery-Peterson fixed point theorem, we investigate the existence of at least three positive solutions for a third order $p$-Laplacian difference equation. As an application, an example is given to illustrate our main results.

References


26  L2 Norm Deconvolution Algorithm Applied to Ultrasonic Phased Array Signal Processing
Abdessalem Benammar, Redouane Drai and Ahmed Khechida

Detection of failure in laminate composites is complicated compared with ordinary non-destructive testing for metal materials as they are sensitive to echoes drown in noise due to the properties of the constituent materials and the multi-layered structure of the composites. In recent years, rapid development in the fields of microelectronics and computer engineering lead to wide application of phased array systems. Different signal processing and image reconstruction techniques are applied in ultrasonic testing. In this work, the objective is to improve the time resolution of signals obtained from inspection of CFRP sample. The signal processing scheme used is based on L2 Norm deconvolution of the measured signal by fast sequential algorithm. This algorithm performs a search of events by increasing order of importance with respect to a criterion which is described in detail. It gives good results over a wide range of applications. The experimental results show that the L2 Norm deconvolution can enhance the time resolution of the CFRP ultrasonic phased array inspection effectively and help identify the location of defects. Keywords: Ultrasonic Phased Array, signal processing, L2 Norm deconvolution.

References


[3] Zhang Yicheng, Li Xiaohong, Zhang Jun, Ding Hui, Model based reliability analysis of PA ultrasonic testing for weld of hydro turbine runner, Procedia Engineering 16 (2011) 832–839,

27 Multi-Soliton Solutions for Non-Integrable Equations: Asymptotic Approach
Georgy A. Omel’yanov

We describe an approach to construct multi-soliton asymptotic solutions for essentially non-integrable equations. The general idea is realized for the GKdV-4 equation:

$$\frac{\partial u}{\partial t} + \frac{\partial u^4}{\partial x} + \varepsilon \frac{\partial^3 u}{\partial x^3} = 0, \quad x \in \mathbb{R}, \quad t > 0,$$

where the dispersion parameter $\varepsilon$ is assumed to be small.

It has been proved that two and three solitons interact preserving in the leading term the KdV-type scenario of collision: they pass through each other almost without deformation. At the same time, a small radiation tail appears on the left of the solitons.

Our main tool is the Weak Asymptotics Method [1, 2]. We indicate also how to modify this approach in order to construct $N$-soliton asymptotic solutions for $N \geq 3$. A brief review of asymptotic methods as well as results of numerical simulation are included.

References


Universidad de Sonora, Departamento de Matematicas, calle Rosales y Blvd. Encinas, s/n, 83000, Hermosillo, Sonora, Mexico, omel@hades.mat.uson.mx

This work was supported by the SEP-CONACYT under grant 178690 (Mexico)
28 On Interpolation Functions for the $q$-analogue of the Eulerian Numbers Associated with any Character

Mustafa Alkan and Yilmaz Simsek

Simsek [1] defined generating functions for the Eulerian numbers and polynomials. In this paper, we study on these generating functions and their properties. The aim of this paper is to construct $q$-interpolation functions of the generalized Eulerian type numbers attached to any characters. We give some results, remarks and identities related to these functions and characters.

References


29 Computation of $p$-values for Mixtures of Gaussians
Burcin Simsek and Satish Iyengar

For unimodal distributions, $p$-values are typically tail probabilities. In this paper, we address the problem of computing $p$-values for mixtures of the Gaussian distributions. The “tail” regions are those that have small probability under each component of the mixture. We compare the use of moment methods and exponential tilting to estimate the probabilities of such tail regions.
30 Nonclassical Appell Polynomials  
Rahime Dere and Yilmaz Simsek  

In this paper we study on the nonclassical Appell polynomials associated with umbral calculus. We introduce nonclassical Bernoulli polynomials and nonclassical Euler polynomials, which are the Appell polynomials. Furthermore, we give some identities of these polynomials by using nonclassical umbral calculus methods.  

References  

Rahime Dere: University of Akdeniz, Faculty of Science, Department of Mathematics, TR-07058 Antalya, Turkey, rahimedere@akdeniz.edu.tr  
Yilmaz Simsek: University of Akdeniz, Faculty of Science, Department of Mathematics, TR-07058 Antalya, Turkey, ysimsek@akdeniz.edu.tr
31 Remarks on the Central Factorial Numbers
Yilmaz Simsek

In [3], we gave some analytic functions which are related to the generating functions for the central factorial numbers. By using these functions, we derive identities—some old and some new—for the central factorial numbers, the Stirling numbers and special numbers.

References

32 Nodals Solutions of the Fourth Order Equations Involving Paneitz-Branson Operator with Critical Sobolev Exponent

Boughazi Hichem

Given \((M,g)\) a smooth compact Einstein manifold of dimension \(n \geq 5\), with negative scalar curvature \(S_g\), for \(u \in C^\infty(M)\), the geometric Paneitz-Branson operator \(P_g\) is reduced to
\[
P_g u = \Delta^2_g u + a_n S_g \Delta_g u + b_n S^2_g u.
\]
M.Benalili and H.Boughazi defined the \(k\)-th Paneitz-Branson invariant by
\[
\mu_k(M,g) = \inf_{\tilde{g} \in [g]} \frac{\lambda_k(\tilde{g}) [\text{vol}(M, \tilde{g})]^{\frac{2}{n}}}{\text{vol}(M,g)^{\frac{4}{n}}},
\]
where the \(\lambda_k(g)\) is the \(k\)-th eigenvalue when the scalar curvature \(S_g\) is negative, the Paneitz-Branson operator is non necessary coercive and we give a new technic for study the standard Paneitz-Branson invariant \(\mu(M,g)\), the first Paneitz-Branson invariant \(\mu_1(M,g)\) and the second Paneitz-Branson invariant \(\mu_2(M,g)\). The main point of this work is to complete the results of [1] M.Benalili, H.Boughazi. We recall that study the standard Paneitz-Branson invariant is a challenging open problem, we find nodals solutions in few cas, study the positivite of solutions it seem to be impossible, we have always \(\mu(M,g) > -\infty\) contrary to \(\mu_1(M,g)\) and \(\mu(M,g)\) is always attained, the nodals solutions \(w\) of the fourth order equations involving Paneitz-Branson operator with critical Sobolev exponent i.e, \(P_g v = \mu_2(M,g)|w|^{N-2}w\).

References


33 Bilinear Multipliers of Weighted Wiener Amalgam Spaces and Variable Exponent Wiener Amalgam Spaces

Öznur Kulak and A. Turan Gürkanlı

Let $\omega_1$, $\omega_2$ be slowly increasing weight function and let $\omega_3$ be any weight function on $\mathbb{R}^n$. Assume that $m(\xi, \eta)$ is a bounded function on $\mathbb{R}^n \times \mathbb{R}^n$. We define

$$B_m(f, g)(x) = \int_{\mathbb{R}^n} \int_{\mathbb{R}^n} \hat{f}(\xi) \hat{g}(\eta) e^{2\pi i (\xi + \eta \cdot x)} d\xi d\eta$$

for all $f, g \in C_c^\infty(\mathbb{R}^n)$, where $C_c^\infty(\mathbb{R}^n)$ denotes the space of infinitely differentiable complex-valued functions with compact support on differentiable $\mathbb{R}^n$. Also let $W(L^{p_1}, L^{q_1})$, $W(L^{p_2}, L^{q_2})$ and $W(L^{p_3}, L^{q_3})$ be Wiener amalgam spaces. We say that $m(\xi, \eta)$ is a bilinear multiplier on $\mathbb{R}^n$ of type $(W(p_1, q_1; p_2, q_2, \omega_2; p_3, q_3, \omega_3))$ if $B_m$ is bounded operator from $W(L^{p_1}, L^{q_1}) \times W(L^{p_2}, L^{q_2})$ to $W(L^{p_3}, L^{q_3})$ where $1 \leq p_1 \leq q_1 < \infty$, $1 \leq p_2 \leq q_2 < \infty$, $0 < p_3, q_3 \leq \infty$. We denote by $BM(W(p_1, q_1; p_2, q_2, \omega_2; p_3, q_3, \omega_3))$ the vector space of bilinear multipliers of type $(W(p_1, q_1; p_2, q_2, \omega_2; p_3, q_3, \omega_3))$ from $W(L^{p_1}, L^{q_1}) \times W(L^{p_2}, L^{q_2})$ to $W(L^{p_3}, L^{q_3})$ where $p_1(x) \leq q_1$, $p_2(x) \leq q_2$, $p_3(x) < \infty$ for all $x \in \mathbb{R}^n$. We denote by $BM(W(p_1(x), q_1; p_2(x), q_2, \omega_2; p_3(x), q_3, \omega_3))$ the vector space of bilinear multipliers of type $(W(p_1(x), q_1; p_2(x), q_2, \omega_2; p_3(x), q_3, \omega_3))$. Similarly, we discuss some properties of this space.

Some key references are given below.

References

34 Global Optimization Problem of Lipschitz Functions Using $\alpha$-Dense Curves

Djaouida Guettal and Mohamed Rahal

In this paper, we study a coupling of the Alienor method with the algorithm of Piyavskii-Shubert. The classical multidimensional global optimization methods involves great difficulties for their implementation to high dimensions. The Alienor method allows to transform a multivariable function into a function of a single variable for which it is possible to use efficient and rapid method for calculating the the global optimum. This simplification is based on the using of a reducing transformation called Alienor.

References

Estimating 2-D GARCH Models by Quasi-Maximum Likelihood
Soumia Kharfouchi

The introduction of the Autoregressive Conditional Heteroscedasticity (ARCH) model in the famous paper of Engel (1982) was a natural starting point in modeling the temporal dependencies in the conditional variance of financial time series. This model allows the variance to depend on the past of the random process. Since, numerous variants and extensions of this model have been proposed. Generalized ARCH (GARCH) model is the main natural extension of this model, the passage has been done in a way that is similar to the passage from the AR model to the ARMA one. A large strand of the financial literature is devoted to one-dimensional GARCH model; see for example Bollerslev (1986), Bollerslev, Engle and Nelson (1994), Palan (1996), Shepherd (1996). Next, this GARCH model has seen many extensions with the introduction of lagged values of the variance or models allowing to take into account the phenomena of asymmetry such as EGARCH models (Exponential GARCH) proposed by Nelson (1991), TGARCH models (Threshold GARCH) proposed by Zakoian (1991), or again DCC-MV GARCH models (Multivariate GARCH with Dynamical Conditional Correlation) proposed by Engle and Sheppard (2001). The treatment of spatial interaction (dependence) and spatial structure (heterogeneity) in practice may be modeled by some random fields \((X_t)_{t \in \mathbb{Z}^d}\). Noiboar and Cohen (2005) had the idea of extending the one-dimensional GARCH model into two-dimensions in order to take into account the variability of the variance trough the space. They could also show that the two-dimensional GARCH model generalizes the causal Gauss Markov Random Field (GMRF), largely used in clutter modeling with the disadvantage of having a constant conditional variance trough the space which makes the use of a GARCH clutter modeling better than the use of a GMRF one. This phenomena is often found on natural images because they are corrupted due to several factors, such as performance of imaging sensors and characteristics of the transmission channel (Amirmazlaghani and Amindavar (2010)). Furthermore, data of textural information such as images of geographical regions that allow the production of some maps, and in general, a lot of images of the earth are characterized by a behavior in cluster of the space variability (clustering of innovations) i.e. significant changes tend to follow big changes small changes tend to follow small changes; it is clearly seen in the image itself where the decrease of the level of gray calls a decrease. On the other hand, research on statistical properties of images wavelet coefficients have shown that the marginal distribution of wavelet coefficients are highly kurtotic, and can be described using suitable heavy-tailed distribution (cf. Achim et al 2003). Indeed, Amirmazlaghani and Amindavar (2009) showed that the subband decomposition of SAR images has significantly non-gaussian statistics that are best described by the 2-D GARCH model. It should be noted that statistical and probabilistic properties as well as building the parameter estimates have been gained more attention for the spatial linear models than the nonlinear one, despite of the well known nonlinearity structure of many spatial series, this is partly due to the fact that the existence of spatial dependence creates difficulties for building such estimates. So, the purpose of this paper is to present the quasi-maximum likelihood (QML) method which provides, for GARCH models, theoretical framework for proving efficiency of estimators under mild regularity conditions, but with no moment assumptions on the observed process. Consistency and the asymptotic normality of the QML estimators of coefficients of 2-D GARCH are derived under optimal conditions.

References
An Approach Using Stream Ciphers Algorithm for Speech Encryption and Decryption
Belmeguenai Aissa, Mansouri Khaled and Lashab Mohamed

In this work, we have done an efficient implementation of stream ciphers algorithm for speech data encryption and decryption. The stream cipher algorithm is proposed. The design based on linear feedback shift register (LFSR) whose polynomial is primitive and nonlinear Boolean function. At first three speech signal were recorded from different speakers and were saved as wav file format. Then our developed program was used to transform the original speech signal wav file into positive signal data, and transform the positive data signal into positive digital signal file. Finally, we used our implemented program to encrypt and decrypt speech data. We conclude the paper by showing that the design can resist to certain known attacks.

References
A Generalized Statistical Convergence for Sequences of Sets via Ideals

Ömer Kişi and Ekrem Savaş

The notion of statistical convergence of sequences of numbers was introduced by Fast [1] and Schoenberg [5] independently. Over the years and under different names statistical convergence has been discussed in the theory of Fourier analysis, Number Theory. Later on, statistical convergence turned out to be one of the most active areas of research in summability theory after the works of Fridy [2] and Salat [4]. In last few years, many generalization of statistical convergence have appeared.

The concept of $I-$convergence of real sequences is a generalization of statistical convergence which is based on the structure of the ideal I of subsets of the set of natural numbers. P. Kostyrko et al. [3] introduced the concept of $I-$convergence of sequences in a metric space and studied some properties of this convergence.

In this study, we make a new approach to the notions of $[V,\lambda]-$summability and $\lambda-$statistical convergence of sequence of sets by using ideals and introduce new notions, namely, $I-[V,\lambda]-$summability, $I_{\lambda}-$statistical convergence of sequence of sets. We mainly examine the relation between these two methods and also the relation between $I-[V,\lambda]-$summability, $I_{\lambda}-$statistical convergence of sequence of sets are introduced by the authors recently.

References

38 Some Embedding Questions for Weighted Difference Spaces
Leili Kussainova and Ademi Ospanova

We introduce weighted space $w^2_p(\nu)$ which is a difference analogue of weighted Sobolev space $W^2_p(\nu)$ ($1 \leq p < \infty$). A compactness question for operator $A : w^2_p(\nu) \to l_q(\nu)$ acting from $w^2_p(\nu)$ into the space of sequences $l_q(\nu)$ ($1 < p \leq q < \infty$) is investigated. Also estimates of approximation numbers for the embedding operator $A$ are considered. Besides, it is possible to apply these research methods to the spectral theory of difference analogues of differential operators.

References

39 On \((\lambda, I)\)–Statistical Convergence of Order \(\alpha\) of Sequences of Function

Hacer Şengül and Mikail Et

In this talk, we introduce and examine the concepts of pointwise \((\lambda, I)\)–statistical convergence of order \(\alpha\) and pointwise \(w_p(f, \lambda, I)\)–summability of order \(\alpha\) of sequences of real valued functions and we investigated between their relationship. We aim some notions and results from the statistical convergence of order \(\alpha\) of sequences of function are extended to the \(I\)–convergence of order \(\alpha\) of sequences of function.

References


Hacer Şengül: Siirt University, Faculty of Science, Department of Mathematics, Siirt-Turkiye, hacer.sengul@hotmail.com
Mikail Et: Firat University, Faculty of Science, Department of Mathematics, Elaziğ-Turkiye, mikailet@yahoo.com
40 Range Kernel Orthogonality of Generalized Derivations
Messaoudene Hadia

Let $\mathcal{L}(H)$ be the algebra of all bounded linear operators acting on a complex separable and infinite dimensional Hilbert space $H$. For operators $A, B, X \in \mathcal{L}(H)$, we define the generalized derivation $\delta_{A,B}$ associated with $(A, B)$ by $\delta_{A,B}(X) = AX - XB$ for $X \in \mathcal{L}(H)$.

The purpose of this work is to find for which operators $A, B \in \mathcal{L}(H)$ we have:

$$||T - (AX - XB)|| \geq ||T||$$

for all $X \in \mathcal{L}(H)$ and for all $T \in \ker \delta_{A,B}$. 

Faculty of Economics sciences and Management, University of Tebessa-Algeria, mh0467@yahoo.fr
41 On Stancu Variant of $q$-Baskakov-Durrmeyer Type Operators

P.N.Agrawal and A.Sathish Kumar

In recent years, one of the most interesting areas of research in approximation theory is the application of $q$-calculus. Phillips [8], first introduced the $q$-analogue of well known Bernstein polynomials. Subsequently, several researchers proposed the $q$-analogues of exponential, Kantorovich and Durrmeyer type operators. Recently $q$-Baskakov operators and their Kantorovich and Durrmeyer variants have been studied in [3, 1] and [2] respectively. Stancu [7] introduced a generalization of Bernstein polynomials by defining the positive linear operators $P_n^{(q)}: C[0, 1] \to C[0, 1]$ by

$$P_n^{(q)}(f, x) = \sum_{k=0}^{n} b_{n,k}(x)f \left( \frac{x}{n+q} \right),$$

where $b_{n,k}(x) = \binom{n+k}{k} x^k (1-x)^{n-k}$ and $\alpha, \beta$ are any two real numbers which satisfy the condition $0 \leq \alpha \leq \beta$. If $\alpha = \beta = 0$, the above sequence of operators reduces to Bernstein polynomials. His work led many researchers to consider similar type of modification of various sequences of operators. In 2012, the authors [7] studied some approximation properties of the Baskakov-Durrmeyer-Stancu operators. Recently, we [1] introduced the $q$-analogue of Bernstein-Schurer-Stancu operators and discussed the local and global approximation results for these operators. To approximate Lebesgue integrable functions (41.1) reduce to (41.1). The purpose of this paper is to study some approximation properties of the operators defined in (41.1). First, we give the basic convergence theorem and then obtain Voronovskaja type theorem. Subsequently, we study the local and global approximation results and then obtain the rate of convergence in terms of the weighted modulus of continuity. Additionally, we consider a modification of the operators (41.2), following King’s approach to get a better approximation.

References


Department of Mathematics, Indian Institute of Technology Roorkee, Roorkee-247667, India, pna_iitr@yahoo.co.in, mathsathish9@gmail.com

Dedicated to Prof. R. P. Agarwal on his 67th birthday.
42 Generalised Baskakov Kantorovich Operators

P.N.Agrawal and Meenu Goyal

For \( f \in L_1[0,1] \) (class of Lebesgue integrable functions on \([0,1]\)), Kantorovich introduced the operators
\[
K_n(f;x) = (n + 1) \sum_{\nu=0}^{n} p_{n,\nu}(x) \int_{0}^{1} \chi(t)f(t)dt,
\]
where \( p_{n,\nu}(x) = \binom{n}{\nu} x^\nu (1-x)^{n-\nu}, \ x \in [0,1] \) is the Bernstein basis function and \( \chi(t) \) is the characteristic function of the interval \([\nu \frac{n}{n+1}, \nu \frac{n}{n+1}+1]\).

Many authors have studied the approximation properties of these operators. Subsequently, several authors have proposed the Kantorovich-type modification of different linear positive operators and studied their approximation properties. Recently in [1], Erencin defined the Durrmeyer type modification of generalised Baskakov operators introduced by Miheșan [2], as
\[
L_n(f;x) = \sum_{k=0}^{\infty} W_{n,k}^a(x) \frac{1}{B(k+1,n)} \int_{0}^{\infty} t^k (1+t)^{n+k+1} f(t)dt, \quad x \geq 0.
\]

Inspired by the above work, we consider the Kantorovich type modification of generalised Baskakov operators for the function \( f \) defined on \( C_\gamma[0,\infty) := \{ f \in C[0,\infty] : |f(t)| \leq M(1+t)^\gamma \} \) for some \( M > 0, \gamma > 0 \) as follows :
\[
K_n^a(f;x) = (n + 1) \sum_{k=0}^{\infty} W_{n,k}^a(x) \int_{0}^{\infty} \frac{t^k}{\pi^k} f(t)dt, \quad a \geq 0. \tag{42.1}
\]

The purpose of this paper is to study some local direct results, degree of approximation for a Lipschitz type space, approximation of continuous functions with polynomial growth, simultaneous approximation properties for the operators defined in (42.1). In the last section, we construct the bivariate case for these operators and then discuss the rate of convergence in terms of the modulus of continuity.

References


Department of Mathematics, Indian Institute of Technology Roorkee, Roorkee-247667, India, pna_iitr@yahoo.co.in, meenu.goyal_iitr@yahoo.com
Approximate Solutions of Fractional Order Boundary Value Problems by a Novel Method

Ali Akgul

An approximate solution of a fractional order two-point boundary value problem (FBVP) is given in this work. We use the reproducing kernel Hilbert space method. In order to illustrate the applicability and accuracy of the present method, the method is applied to some examples. The results are compared with the ones obtained by the Cubic splines and sinc-Galerkin methods. There are only a few studies regarding the application of reproducing kernel method to fractional order differential equations. Therefore, this study is going to be a new contribution and highly useful for the researchers in fractional calculus area of scientific research. Results of numerical examples show that the presented method is very effective.

References

44 Some Power Series on Archimedean and Non-Archimedean Fields

Fatma Çalışkan

In the present study, we proved that the theorem which was established in complex (Archimedean) field and p-adic (non-Archimedean) field has an analogue in the formal Laurent series (non-Archimedean) field over a finite field. Hence we show that some power series in the formal Laurent series field on the finite field $F$ take values either Liouville or from $F(x)$ for Liouville arguments under certain conditions, where $F(x)$ is the quotient field of the polynomial ring $F[x]$ on the finite field $F$.

References

45  Existence and Monotone Iteration of Symmetric Positive Solutions for Integral Boundary-Value Problems with $\phi$-Laplacian Operator

Tugba Senlik and Nuket Aykut Hamal

The purpose of this talk is to investigate the existence and iteration of symmetric positive solutions for integral boundary-value problem. An existence result of positive, concave and symmetric solutions and its monotone iterative scheme are established by using the monotone iterative technique. An example is worked out to demonstrate the main result.

References


Tugba Senlik: Ege University, Faculty of Science, Department of Mathematics, Bornova, Izmir- Turkey, tubasenlik@gmail.com

Nuket Aykut Hamal: Ege University, Faculty of Science, Department of Mathematics, Bornova, Izmir-Turkey, nuket.aykut@ege.edu.tr
46 Analytical Calculation of Partial Differential Equations Applied to Electrical Machines With Ideal Halbach Permanent Magnets

Mourad Mordjaoui, Ibtissam Bouloukza and Dib Djalel

Recently several electrical machines and devices use high energy permanent magnets with different direction of flux penetration. For the design and dimensioning of these electromechanical systems, we must know the distribution of the magnetic field in each part of the magnetic system and in particular at the air gap in which the energy conversion takes place. Generally, Maxwell’s partial differential equations supplemented by material’s law are used to describe the magnetic field problems. However, a numerical calculation is necessary, especially with the complex geometry of these devices. This paper deals with an analytical calculation of magnetic field distribution of iron-cored internal rotor of surface mounted permanent magnetic synchronous motor with ideal Halbach magnetization. A Halbach array is a special arrangement of permanent magnets that concentrates the magnetic flux lines on one side while reducing the flux lines on the other side to nearly zero. The model is based on evaluation and calculation of governing partial differential equations at no load conditions. Both field and magnetic induction in airgap and magnet are presented. Results obtained are compared with those obtained by finite-element analysis.

References


Mourad Mordjaoui: Electrical Engineering Department, University of 20 August 1955. Skikda. 21000. Algeria, mordjaoui_mourad@yahoo.fr
Ibtissam Bouloukza: Electrical Engineering Department, University of 20 August 1955. Skikda. 21000. Algeria, Boulekza_ibtm@yahoo.fr
Dib Djalel: Electrical Engineering Department, University of Tebessa. Tebessa, Algeria, Dibdjalel@gmail.com
Principal Functions of Differential Operators with Spectral Parameter in Boundary Conditions

Nihal Yokuş

In this talk, we investigate the principal functions corresponding to the eigenvalues and the spectral singularities of the boundary value problem

\[-y'' + q(x)y = \lambda^2 y, \ x \in \mathbb{R}_+ = [0, \infty),\]

and

\[(\alpha_0 + \alpha_1 \lambda + \alpha_2 \lambda^2) y'(0) - (\beta_0 + \beta_1 \lambda + \beta_2 \lambda^2) y(0) = 0,\]

where \(q\) is a complex valued function and \(\alpha_i, \beta_i \in \mathbb{C}, i = 0, 1, 2\) with \(\alpha_2, \beta_2 \neq 0\).

References


48  Generalized Typically Real Functions

S. Kanas and A. Tatarczak

Let \( f(z) = z + a_2 z^2 + \cdots \) be regular in the unit disk and real valued if and only if \( z \) is real and \(|z|<1\). Then \( f \) is said to be typically real function. Rogosinski found the necessary and sufficient condition for a regular function to be typically-real. The main purpose of the presented paper is a consideration of the generalized typically-real functions defined via the generating function of the generalized Chebyshev polynomials of the second kind

\[
\Psi_{p,q}(e^{i\theta};z) = \frac{1}{(1 - pze^{i\theta})(1 - qze^{-i\theta})} = \sum_{n=0}^{\infty} U_n(p,q;e^{i\theta})z^n,
\]

where \(-1 \leq p, q \leq 1, \ \theta \in \langle 0, 2\pi \rangle, \ |z|<1\).

References


---

S. Kanas: University of Rzeszow, Faculty of Mathematics and Natural Sciences, ul. S. Pigiona 1, 35-310 Rzeszow, Poland, skanas@ur.edu.pl
A. Tatarczak: Maria Curie-Sklodowska University in Lublin, Department of Mathematics, Poland, AnnaTatarczak@poczta.umcs.pl
This work was partially supported by the Centre for Innovation and Transfer of Natural Sciences and Engineering Knowledge, Faculty of Mathematics and Natural Sciences, University of Rzeszow.
49 The Abel-Poisson Summability of Fourier Series in a Banach Space with Respect to a Continuous Linear Representation
Seda Öztürk

Let \((\mathbb{C}, +, \cdot)\) denote the field of the complex numbers, \(T\) be the topological group of the unit circle with respect to the Euclidian topology, \(H\) a complex Banach space, \(\alpha\) a continuous isometric linear representation of \(T\) in \(H\) and \(x\) an element of \(H\). In [2,3] a fourier series of \(x\) with respect to a continuous isometric linear representation \(\alpha\) of the form
\[
\sum_{k=-\infty}^{\infty} F_k(\alpha, x)
\]

is defined where
\[
F_k(\alpha, x) := \frac{1}{2\pi} \int_{-\pi}^{+\pi} e^{-ikt} \alpha(t)(x) dt
\]

for every \(k \in \mathbb{Z}\), and it is proved that this series converges to \(x\) in sense of Cesàro summability method.

In this work, it is directly proved that the series \(\sum_{k=-\infty}^{\infty} F_k(\alpha, x)\) is Abel-Poisson summable.

References

Karadeniz Technical University, Faculty of Science, Department of Mathematics, Trabzon-Turkey, seda.ozturk.seda@gmail.com
50 Existence of Solutions for Integral Boundary Value Problems in Banach Spaces
Fulya Yoruk Deren and Nuket Aykut Hamal

In this talk, by using the Sadovski fixed point theorem, we establish the existence results of solutions for nonlinear boundary value problems of second order differential equations with integral boundary conditions in Banach spaces.

References
51 Existence and Uniqueness Solution of Electro-Elastic Antiplane Contact Problem with Friction
Mohamed Dalah, Khoudir Kibeche, Amar Megrous, Ammar Derbazi and Soumia Ahmed Chaouache

We study electro-mechanical problem modeling the antiplane shear deformation of a cylinder in frictional contact with a rigid foundation. The material is assumed to be electro-elastic and the foundation is assumed to be electrically conductive and the friction is modeled with Tresca’s law. For each problem we present the mathematical model, its variational formulation, and state an existence and uniqueness result.

References


Mohamed Dalah: University of Constantine 1, Faculty of Sciences, Department of Mathematics, B.P. 325 Route Ain El Bey, Constantine 25017, Algeria, dalah.mohamed@yahoo.fr

This work is supported in part by la Direction Générale de la Recherche Scientifique et du Développement Technologique CNEPRU project & PNR Project, 2011–2013., CODE (valeur) : 8/u250/4506 registered in University Constantine 1, Algeria, under grant B00920100136., Title: Modélisation mathématiques pour les problèmes Electro-Elastique et Visco-Elastique : analyse, optimisation et approche numérique des modèles. number UAP(F)-2012/15.
52 Almost Convex Valued Perturbation to Time Optimal Control Sweeping Processes
Doria Affane and Dalila Azzam-Laouir

We prove existence of solution for first order differential inclusion governed by the sweeping process of the form
\[
\begin{align*}
\dot{u}(t) & \in -N_{K(t)} u(t) + F(u(t)) \\
u(T) & \in K(t) \\
u(0) & = u_0 
\end{align*}
\]
(52.1)

where the perturbation $F$ is an upper semicontinuous multifunction with compact almost convex values. Moreover, we prove the existence of solutions to an associate time optimal control problem.
53 Evolution Problem Governed by Subdifferential Operator

Mustapha Yarou

In the present talk we consider the Cauchy problem for first order differential inclusion of the form

\[ \dot{x}(t) \in F(x(t)) + f(t, x(t)), \quad x(0) = x_0 \] (53.1)

where \( F \) is a given set-valued map with nonconvex values and \( f \) is a Carathéodory function. The nonconvexity of the values of \( F \) do not permit the use of classical technique of convex analysis to obtain the existence of solution to this problem (see for instance [2]). One way to overcome this fact is to suppose \( F \) upper semicontinuous cyclically monotone, i.e. the values of \( F \) are contained in the subdifferential of a proper convex lower semicontinuous function. The first result is due to [6] when \( f \equiv 0 \) and [1] for the problem (53.1) in the finite dimensional setting. An extension of [6] is obtained by [3] and [4] in the finite and infinite dimensional setting, under the assumption that \( F(x) \) is contained in the subdifferential of a locally Lipschitz and regular function. A different class of function has been used in [5] to solve the same problem, namely the authors take \( F(x) \) in the proximal subdifferential of a locally Lipschitz uniformly regular function and proved that any convex lower continuous function is uniformly regular. We prove that, for locally Lipschitz functions, the class of convex functions, the class of lower-\( C^2 \) functions and the class of uniformly regular functions are strictly contained within the class of regular functions and we present existence results to problem (1.1) in \( \mathbb{R}^n \) and in an infinite dimensional Hilbert space by replacing the additional assumptions in [3] and [4] by a weaker and more natural condition.

References

54 Nonlinear Elliptic Problem Related to the Hardy Inequality with Singular Term at the Boundary

B. Abdellaoui, K. Biroud, J. Davila and F. Mahmoudi

Let $\Omega \subset \mathbb{R}^N$ be a bounded regular domain of $\mathbb{R}^N$ and $1 < p < \infty$. The paper is divided in two main parts. In the first part we prove the following improved Hardy Inequality for convex domains. Namely, for all $\phi \in W^{1,p}_0(\Omega)$, we have

$$
\int_{\Omega} |\nabla \phi|^p dx - \left(\frac{p-1}{p}\right) \int_{\Omega} \frac{|\phi|^p}{d^{2p}} dx \geq C \int_{\Omega} |\nabla \phi|^p \left( \log \left( \frac{D}{d} \right) \right)^{-p} dx,
$$

where $d(x) = \text{dist}(x, \partial \Omega)$, $D > \sup_{x \in \Omega} d(x)$ and $C$ is a positive constant depending only on $p, N$ and $\Omega$. The optimality of the exponent of the logarithmic term is also proved. In the second part we consider the following class of elliptic problem

$$
\begin{cases}
-\Delta u = \frac{u^q}{d^2} & \text{in } \Omega, \\
u > 0 & \text{in } \Omega, \\
u = 0 & \text{on } \partial \Omega,
\end{cases}
$$

where $0 < q \leq 2^* - 1$. We investigate the question of existence and nonexistence of positive solutions depending on the range of the exponent $q$. 
On Periodic Solutions of Nonlinear Differential Equations in Banach Spaces

Abdullah Çavuş, Djavvat Khadjiev and Seda Öztürk

Let $A$ denote the generator of a strongly continuous periodic one-parameter group of bounded linear operators in a complex Banach space $H$. In this work, an analog of the resolvent operator which is called quasi-resolvent operator $R_\lambda$ is defined for points of the spectrum, some equivalent conditions for compactness of the quasi-resolvent operators $R_\lambda$ are given. Then using these and some results obtained in [1-7], some theorems on existence of periodic solutions to the non-linear equations $\Phi(A)x = f(x)$ are given, where $\Phi(A)$ is a polynomial of $A$ with complex coefficients and $f$ is a continuous mapping of $H$ into itself.

References

[6] D. Khadjiev, A.Çavuş, Fourier series in Banach spaces, Inverse and Ill-Posed Problems Series, Ill-Posed and Non-Classical Problems of Mathematical Physics and Analysis,

Abdullah Çavuş: Karadeniz Technical University, Faculty of Science, Department of Mathematics, Trabzon-Turkey, abcavus@gmail.com
Djavvat Khadjiev: Karadeniz Technical University, Faculty of Science, Department of Mathematics, Trabzon-Turkey, khdjavvat@gmail.com
Seda Öztürk: Karadeniz Technical University, Faculty of Science, Department of Mathematics, Trabzon-Turkey, seda.ozturk.seda@gmail.com
56 Generalized $\alpha$-$\psi$-Contractive type M Mappings of Integral Type
Erdal Karapinar, P. Shahi and Kenan Tas

In this talk, we introduce the two classes of generalized $\alpha$-$\psi$-contractive type mappings of integral type and to analyze the existence of fixed points for these mappings in complete metric spaces. Our results are improved versions of a multitude of relevant fixed point theorems of the existing literature. Examples are provided to support the results and concepts presented herein.

References

[6] Shahi, P., Kaur, J. and Bhatia, S. S., Fixed point theorems for $\alpha$-$\psi$-contractive type mappings of integral type with applications, accepted for publication in Journal of Nonlinear and Convex Analysis.

Erdal Karapinar: Department of Mathematics, Atılım University 06836, Incek, Ankara, Turkey, ekarapinar@atilim.edu.tr
P. Shahi: School of Mathematics and Computer Apps, Thapar University, Patiala-147004, Punjab, India, priya.thapanri@gmail.com
Kenan Tas: Department of Mathematics and Computer Science, Cankaya University, Ankara, Turkey, kenan@cankaya.edu.tr
57 Caristi’s Fixed Point Theorem in Fuzzy Metric Spaces
Hamid Mottaghi Golshan

In the present work, we extend Caristi’s Fixed Point theorem, Ekeland’s variational principle and Takahashi’s maximization theorem to fuzzy metric spaces in the sense of George and Veeramani [A. George, P. Veeramani, On some results in fuzzy metric spaces, Fuzzy Sets and Systems. 64 (1994) 395-399]. Further, a direct simple proof of the equivalences between these theorems is provided.

References

Department of Mathematics, Islamic Azad University, Ashtian Branch, Ashtian, Iran, Tel,Fax:+988627222627, motgolham@mail.aiau.ac.ir or motgolham@gmail.com
This research was partially supported by Islamic Azad University, Ashtian branch.
58 Determination of the Unknown Coefficient in Time Fractional Parabolic Equation with Dirichlet Boundary Conditions

Ebru Ozbilge and Ali Demir

In this talk the mathematical analysis of the inverse coefficient problem of identifying the unknown coefficient \( k(x) \) in the linear time fractional parabolic equation \( D^\alpha_t u(x,t) = (k(x)u_x)_x \), \( 0 < \alpha \leq 1 \), with Dirichlet boundary conditions \( u(0, t) = \psi_0(t) \), \( u(1, t) = \psi_1(t) \) was discussed. By defining the input-output mappings \( \Phi[\cdot] : K \rightarrow C^1[0,T] \) and \( \Psi[\cdot] : K \rightarrow C^1[0,T] \) the inverse problem is reduced to the problem of their invertibility. Hence the main purpose of this study is to investigate the distinguishability of the input-output mappings \( \Phi[\cdot] \) and \( \Psi[\cdot] \). This work shows that the input-output mappings \( \Phi[\cdot] \) and \( \Psi[\cdot] \) have distinguishability property. Moreover, the value \( k(0) \) of the unknown diffusion coefficient \( k(x) \) at \( x = 0 \) and the value \( k(1) \) of the unknown diffusion coefficient \( k(x) \) at \( x = 1 \) can be determined explicitly by making use of measured output data (boundary observation) \( k(0)u_x(0, t) = f(t) \) and \( k(1)u_x(1, t) = h(t) \) respectively, which brings greater restriction on the set of admissible coefficients. It is also shown that the measured output data \( f(t) \) and \( h(t) \) can be determined analytically by a series representation, which implies that the input-output mappings \( \Phi[\cdot] : K \rightarrow C^1[0,T] \) and \( \Psi[\cdot] : K \rightarrow C^1[0,T] \) can be described explicitly.

References


Ebru Ozbilge: Izmir University of Economics, Department of Mathematics, Faculty of Science and Literature, Sakarya Caddesi, No.156, 35330, Balcova, Izmir, Turkey, ebru.ozbilge@ieu.edu.tr
Ali Demir: Kocaeli University, Department of Mathematics, Umuttepe, 41380, Izmit, Kocaeli, Turkey, ademir@kocaeli.edu.tr

The research was supported by parts by the Scientific and Technical Research Council (TUBITAK) of Turkey and Izmir University of Economics.
59 On $p$-adic Ising Model with Competing Interactions on the Cayley Tree
Farrukh Mukhamedov, Hasan Akın and Mutlay Dogan

It is known that the Ising model is one of the most studied models in statistical mechanics. Since, this model is related to a number of outstanding problems in statistical and mathematical physics, and in graph theory. On the other hand, that most of modern science is based on mathematical analysis over real and complex numbers. However, it is turned out that for exploring complex hierarchical systems it is sometimes more fruitful to use analysis over $p$-adic numbers and ultrametric spaces. Therefore, in this direction a lot of investigations are devoted to the mathematical physics models over $p$-adic field. In the present paper, we further develop the theory of statistical mechanics. Namely, we consider $p$-adic Ising model with competing next-nearest-neighbor interactions on the Cayley tree of order two. Note that usual $p$-adic Ising model on the tree was earlier studied by the first author. A main aim of this work is the establishment of a phase transition phenomena for the mentioned model. Here the phase transition means the existence of two nontrivial $p$-adic Gibbs measures. To prove the occurrence of the phase transition we reduce the problem to the existence of at least two solutions of nonlinear difference equations.

Farrukh Mukhamedov: Department of Computational & Theoretical Sciences, Faculty of Science, International Islamic University Malaysia, P.O. Box, 141, 25710, Kuantan, Pahang, Malaysia, far75m@yandex.ru, darrukh_m@iium.edu.my
Hasan Akın: Department of Mathematics, Faculty of Education, Zirve University, Kizilhisar Campus, Gaziantep, 27260, Turkey, hasanakind99@gmail.com
Mutlay Dogan: Department of Mathematics, Faculty of Education, Zirve University, Kizilhisar Campus, Gaziantep, 27260, Turkey, mutlay74@hotmail.com
A Spectral Domain Computational Technique Dedicated to Fault Detection in Induction Machine

A. Medoued, A. Lebaroud, O. Boudebbouz and D. Sayad

This paper presents a computational technique in the spectral domain based on the analysis of three parameters of any signal issued from experimental measurements. This analysis is applied for the purpose of a better detection and characterization of defects in induction machine. This technique concerns the analysis of the power spectrum signal, the stator current signal decomposed in terms of the instantaneous phase and instantaneous frequency using Hilbert transform of the current signal absorbed by the induction machine. The advantage of this technique is that it makes it possible to highlight the defects of the machine components independently of the amplitude of the measured signals and regardless of load level.

References

61 Some Results on Double Fuzzy Topogenous Orders
Vildan Çetkin and Halis Aygün

The first aim of this talk is to introduce the concept of lattice valued double fuzzy topogenous structure. The second is to investigate the connections between the double fuzzy topogenous order, double fuzzy topology, double fuzzy interior operator and also double fuzzy proximity order. So, we have some results on lattice valued double fuzzy topogenous structure.

References


Vildan Çetkin: Kocaeli University, Faculty of Arts and Science, Department of Mathematics, Umuttepe Campus, Kocaeli-Turkiye, vcetkin@gmail.com, vildan.cetkin@kocaeli.edu.tr
Halis Aygün: Kocaeli University, Faculty of Arts and Science, Department of Mathematics, Umuttepe Campus, Kocaeli-Turkiye, halis@kocaeli.edu.tr
Finding Fixed Points of Firmly Nonexpansive-Like Mappings in Banach Spaces
Fumiaki Kohsaka

We construct a strongly relatively nonexpansive sequence from a given sequence of firmly nonexpansive-like mappings with a common fixed point in Banach spaces. Using this construction, we next obtain two convergence theorems for firmly nonexpansive-like mappings in Banach spaces and discuss their applications to a zero point problem for maximal monotone operators and a convex feasibility problem.

Let $C$ be a nonempty subset of a real smooth Banach space $X$ and $J: X \to X^*$ the normalized duality mapping. A mapping $T: C \to X$ is said to be firmly nonexpansive-like [2, 4] if

$$\langle Tx - Ty, J(x - Tx) - J(y - Ty) \rangle \geq 0$$

for all $x, y \in C$.

References


Department of Computer Science and Intelligent Systems, Oita University, Japan, f-kohsaka@oita-u.ac.jp
A Fourth Order Accurate Approximation of the First and Pure Second Derivatives of the Laplace Equation on a Rectangle
A.A. Dosiyev and H.M. Sadeghi

In this talk, we discuss an approximation of the first and pure second order derivatives of a solution of the Dirichlet problem on a rectangular domain. The boundary values on the sides of the rectangle are supposed to have the sixth derivatives satisfying the Hölder condition. On the vertices, besides the continuity condition, the compatibility conditions, which result from the Laplace equation for the second and fourth derivatives of the boundary values, given on the adjacent sides, are also satisfied. Under these conditions uniform approximation of order $O(h^4)$ ($h$ is the grid size), is obtained for the solution of the Dirichlet problem on a square grid, its first and pure second derivatives, by a simple difference schemes.
64 On the Positive Solutions for the Boundary Value Problems at Resonance

Ummahan Akcan and Nüket Aykut Hamal

In this study, we investigate the existence of two positive concave solutions to the second-order three-point boundary value problems with integral boundary conditions, \( u''(x) + f(x, u(x)) = 0, u'(0) = u(0), u(1) = \alpha \int_0^\eta u(s)ds \), where \( 0 < \eta < 1 \) and \( f \in C([0, 1] \times [0, +\infty), [0, +\infty)) \). The interesting point here is that we consider the BVP to the resonance case \( \alpha \eta(2 + \eta) = 4 \) to find a new existence result. The proof is based upon the Monoton Iterative Technique.

References


---

Ummahan Akcan: Anadolu University, Faculty of Science, Department of Mathematics, Eskisehir-Turkey, ummahakcan@anadolu.edu.tr

Nüket Aykut Hamal: Ege University, Faculty of Science, Department of Mathematics, Izmir-Turkey, nuket.aykut@ege.edu.tr
On Weighted Approximation of Multidimensional Singular Integrals
Gümrah Uysal and Ertan Ibikli

In this talk, we give some theorems about pointwise approximation to the functions belong to weighted Lebesgue space \( L_{1,w}(\mathbb{R}^n) \), by family of convolution type singular integral operators. Moreover, we will verify the theoretical results with some graphical illustrations.

References


Gümrah Uysal: Karabuk University, Faculty of Science, Department of Mathematics, Balıklarkayasi Mevkii, Karabuk, Turkey, guysal@karabuk.edu.tr
Ertan Ibikli: Ankara University, Faculty of Science, Department of Mathematics, Tandogan, Ankara, Turkey, Ertan.Ibikli@ankara.edu.tr
66 On Hermite-Hadamard Type Inequalities for $\varphi$–Convex Functions via Fractional Integrals

Mehmet Zeki Sarıkaya and Hatice Yaldız

In this talk, we establish integral inequalities of Hermite-Hadamard type involving Riemann-Liouville fractional integrals for $\varphi$-convex functions and some new inequalities of right-hand side of Hermite-Hadamard type are given for functions whose first derivatives absolute values $\varphi$–convex functions via Riemann-Liouville fractional integrals.

References

Behavior of Positive Solutions of a Multiplicative Difference Equation

Durhasan Turgut Tollu, Yasin Yazlık and Necati Taşkara

In this talk, we deal with the positive solutions of the multiplicative difference equation

\[ y_{n+1} = \frac{ay_{n-1}}{by_{n-1}y_n + cy_{n-2}y_n + d}, \quad n \in \mathbb{N}_0, \]

where the coefficients \( a, b, c, \) and \( d \) are positive real numbers and the initial conditions \( y_{-2}, y_{-1}, y_0 \) are nonnegative real numbers. Here, we investigate global character, periodicity, boundedness and oscillation of positive solutions of the above equation.

References


[2] C. Çinar, On the positive solutions of the difference equation \( x_{n+1} = \frac{x_{n-1}}{1+x_nx_{n-1}} \), Applied Mathematics and Computation, 150 (2004), 21-24.


[4] A. Andruch-Sobilo, M. Migda, Further properties of the rational recursive sequence \( x_{n+1} = \frac{a_nx_{n-1}}{b_nx_{n-2} + c_nx_{n-3}}, \) Opuscula Mathematica 26(3)(2006), 387-394.


[6] S. Stević, On the difference equation \( x_n = \frac{x_{n-k}}{a + cx_{n-k} - x_n}, \) Applied Mathematics and Computation 218 (2012), 6291-6296.


[8] H.M. El-Owaidy, A.M. Ahmet, A.M. Youssef, On the dynamics of the recursive sequence \( x_{n+1} = \frac{a_nx_{n-1}}{b_nx_{n-2} + c_nx_{n-3}}, \) Applied Mathematics Letters, 18 (9)(2005), 1013-1018.


[11] M. E. Erdogan, Cengiz Çinar, Ibrahim Yalcinkaya, On the dynamics of the recursive sequence \( x_{n+1} = \frac{a_nx_{n-1}}{b_nx_{n-2} + c_nx_{n-3} + d_nx_{n-4}} \), Computers & Mathematics with Applications, 61 (2011), 533-537.


[13] T.F. Ibrahim, On the third order rational difference equation \( x_{n+1} = \frac{x_{n-1}x_{n-2}}{x_{n-2} + d_nx_{n-3}}, \) Int. J. Contemp. Math. Sciences 4(27)(2009), 1321-1334.

[14] X. Yang, W. Su, B. Chen, G. M. Megson, and D. J. Evans, On the recursive sequence \( x_{n+1} = \frac{ax_{n-1} + by_{n-2}}{c + dx_{n-1}x_{n-2}}, \) Applied Mathematics and Computation, 162 (2005) 1485-1497.


[16] D. Simsek, C. Çinar and I. Yalcinkaya, On the recursive sequence \( x_{n+1} = \frac{x_{n-5k+5}}{1 + x_{n-4k-9}x_{n-5k+4}}, \) Taiwanese Journal of Mathematics 12(5)(2008), 1087-1099.


Durhasan Turgut Tollu: Department of Mathematics-Computer Sciences, Faculty of Science, Necmettin Erbakan University, 42090, Konya-Türkiye, dtollu@konya.edu.tr

Yasin Yazlık: Department of Mathematics, Faculty of Science and Art, Nevşehir Hacı Bektaş Veli University, 50300 Nevşehir-Türkiye, yyazlik@nevsehir.edu.tr

Necati Taskara: Department of Mathematics, Faculty of Science, Selçuk University, Campus, 42075, Konya- Türkiye, ntaskara@selcuk.edu.tr
A New Generalization of the Midpoint Formula for $n$–Time Differentiable Mappings which are Convex

Çetin Yıldız and M. Emin Özdemir

Let $f : I \subset \mathbb{R} \to \mathbb{R}$ be a convex mapping defined on the interval $I$ of real numbers and $a, b \in I$, with $a < b$. The following double inequality is well known in the literature as the Hermite-Hadamard inequality:

$$f\left(\frac{a+b}{2}\right) \leq \frac{1}{b-a} \int_a^b f(x)dx \leq \frac{f(a) + f(b)}{2}.$$ 

A function $f : [a, b] \subset \mathbb{R} \to \mathbb{R}$ is said to be convex if whenever $x, y \in [a, b]$ and $t \in [0, 1]$, the following inequality holds:

$$f(tx + (1-t)y) \leq tf(x) + (1-t)f(y).$$

In this paper, a new identity for $n$–time differentiable functions is established and by using the obtained identity, some new inequalities Hermite-Hadamard type are obtained for functions whose $n$th derivatives in absolute value are convex and concave functions.

References


69 Global Bifurcations of Limit Cycles in the Classical Lorenz System
Valery Gaiko

We consider a three-dimensional polynomial dynamical system
\[
\begin{align*}
\dot{x} &= \sigma(y - x), \\
\dot{y} &= x(r - z) - y, \\
\dot{z} &= xy - bz
\end{align*}
\] (69.1)
known as the Lorenz system. Historically, (69.1) was the first dynamical system for which the existence of an irregular attractor (chaos) was proved for \( \sigma = 10, b = 8/3, \) and \( 24.06 < r < 28. \) The Lorenz system (69.1) is dissipative and symmetric with respect to the \( z \)-axis. The origin \( O(0, 0, 0) \) is a singular point of system (69.1) for any \( \sigma, b, \) and \( r. \) It is a stable node for \( r < 1. \) For \( r = 1, \) the origin becomes a triple singular point, and then, for \( r > 1, \) there are two more singular points in the system: \( O_1(\sqrt{b(r-1)}, \sqrt{b(r-1)}, r-1, \) and \( O_2(-\sqrt{b(r-1)}, -\sqrt{b(r-1)}, r-1) \) which are stable up to the parameter value \( r_a = \frac{\sigma(\sigma + b + 3)}{\sigma - b - 1} \) \((r_a \approx 24.74 \text{ for } \sigma = 10 \text{ and } b = 8/3). \) For all \( r > 1, \) the point \( O \) is a saddle-node.

For many years, the Lorenz system (69.1) has been the subject of study by numerous authors; see, e.g., [1]–[5]. However, until now the structure of the Lorenz attractor is not clear completely yet, and the most important question at present is to understand the bifurcation scenario of chaos transition in system (69.1) which is related to Smale’s Fourteenth Problem [4]. In this talk, we present a new bifurcation scenario for system (69.1), where \( \sigma = 10, b = 8/3, \) and \( r > 0, \) using numerical results of [5] and a bifurcational geometric approach to the global qualitative analysis of three-dimensional dynamical systems which was applied earlier in the two-dimensional case [6]–[8]. This scenario connects globally the homoclinic, period-doubling, Andronov–Shilnikov, and period-halving bifurcations of limit cycles in the Lorenz system (69.1) [9].

References

Geometric aspect of the theory of time scales is extensively studied afterwards the introduction of partial derivatives on time scales. However, an intrinsic characteristic such as curvature of a curve parameterized by a time scale is still an open question. In this talk, we present the concept of curvature via symmetric derivative on time scales. This approach involves both characteristics of discrete and classical differential geometry, and accurately applicable to globally discrete settings. By the help of this definition of curvature, we also present the bending energy for a curve parameterized by a time scale.

References


Sibel Paşalı Atmaca: Muğla Sıtkı Koçman University, Faculty of Science, Department of Mathematics, Menteşe, Muğla-Turkiye, sibela@mu.edu.tr
Ömer Akgüller: Muğla Sıtkı Koçman University, Faculty of Science, Department of Mathematics, Menteşe, Muğla-Turkiye, oakguller@mu.edu.tr
71 Essential Norms of Products of Weighted Composition Operators and Differentiation Operators Between Banach Spaces of Analytic Functions

Jasbir S. Manhas and Ruhan Zhao

We obtain several estimates of the essential norms of the products of differentiation operators and weighted composition operators between weighted Banach spaces of analytic functions with general weights.
72 On the Null Forms, Integrating Factors and First Integrals to Path Equations
Ilker Burak Giresunlu and Emrullah Yaşar

In this work, we consider the path equation
\[ y'' - \frac{f'(y)}{f(y)} \left( \frac{y'}{f(y)} \right)^2 = 0 \]
which modeling the drag forces \cite{1}. The drag forces are the major source of energy loss for objects moving in a fluid medium. Using the relationship between semi-algorithmic Prelle-Singer method \cite{6} and λ-symmetry approach \cite{6}, we obtained null-forms, integrating factors, first integrals and general solutions \cite{4}. Nevertheless exploiting the Lie-point type symmetries we constructed systematically the Jacobi Last Multiplier’s (JLM) \cite{5}. After yielding the these multipliers we obtained Darboux polynomials of the under considered equation. The results was tabulated and compared with those gained by the other methods \cite{6, 7}.

References


\cite{3} C. Muriel and J. L. Romero, Integrating Factors and λ-Symmetries, JNMP, 15 (2008), 300-309.


73 Commutativity of Lommel and Halm Differential Equations
Mehmet Emir Koksal

Many engineering systems are composed of cascade connection of subsystems of simple orders. This is very important in design of electrical and electronic systems. Hence, the commutativity, which is the functional invariance under the change of the connection order, is very important from the practical point of view.

This presentation introduces the commutativity of systems defined by Lommel and Halm type differential equations. These differential equations have been described in the literature and they represent some particular physical systems. The explicate requirements for commutativity of these systems are derived. Under certain circumstances, these systems have commutative pairs some of which have explicit analytical solutions. The outcomes of the presentation is expected to lead new design trends in engineering as to improve the total system performance covering sensitivity, stability, disturbance and robustness.

References

[3] M. Koksal, Commutativity of 4th order systems and Euler systems, Proceeding of National Congress of Electrical Engineers (in Turkish), Paper no:BI-6, Adana, Turkey, 1985,
Equivalence Between Some Iterations in $CAT(0)$ Spaces

Kyung Soo Kim

In this talk, we obtain some equivalence conditions for the convergence of iterative sequences for set-valued contraction mapping in $CAT(0)$ spaces are obtained.

References


Kyungnam University, Department of Education, Mathematics Education Major, Changwon, Gyeongnam, 631-701, Korea, kksmj@kyungnam.ac.kr

This research was supported by Basic Science Research Program through the National Research Foundation of Korea(NRF) funded by the Ministry of Education(2012R1A1A4A01010526)
75 On Certain Combinatoric Convolution Sums of Divisor Functions
Daeyeoul Kim and Nazli Yildiz Ikikardes

In this talk, we study certain combinatorial convolution sums involving divisor functions and their relations to Bernoulli polynomials. We establish two explicit formulas for certain combinatoric convolution sums of divisor functions derived from Bernoulli polynomials.

References


Daeyeoul Kim: National Institute for Mathematical Sciences, Yuseong-daeo 1689-gil, Yuseong-gu, Daejeon 305-811, South Korea, daeyeoul@nims.re.kr
Nazli Yildiz Ikikardes: Department of Elementary Mathematics Education, Necati Bey Faculty of Education, Balikesir University, 10100 Balikesir, Turkey, nyildiz@balikesir.edu.tr
Some Properties of the Genocchi Polynomials with the Variable $[x]_q$

J.Y. Kang and C.S. Ryoo

We introduce the Genocchi polynomials with the variable $[x]_q$ and we get some relations of their polynomials by the $p$-adic integral on $\mathbb{Z}_p$. We also observe an interesting phenomenon of scattering of the zeros of the Genocchi polynomials with the variable $[x]_q$ in complex plane.

References


J.Y. Kang: Department of Mathematics, Hannam University, Daejeon 306-791, Korea, rkdwjdnnr2002@yahoo.co.kr
C.S. Ryoo: Department of Mathematics, Hannam University, Daejeon 306-791, Korea, ryocs@hnu.kr
This work was supported by NRF(National Research Foundation of Korea) Grant funded by the Korean Government (NRF-2013-Fostering Core Leaders of the Future Basic Science Program).
77 Boundedness of Localization Operators on Lorentz Mixed Normed Modulation Spaces
Ayşe Sandıkçı

The localization operator $A_{\varphi_1,\varphi_2}^a$ with symbol $a \in S'(\mathbb{R}^d)$ and windows $\varphi_1, \varphi_2$ is defined to be

$$A_{\varphi_1,\varphi_2}^a f(t) = \int_{\mathbb{R}^{2d}} a(x,w) V_{\varphi_1} f(x,w) M_w T_x \varphi_2 dx dw.$$

In this work we study certain boundedness properties for localization operators on Lorentz mixed normed modulation spaces, when the operator symbols belong to appropriate Wiener amalgam spaces and Lorentz spaces with mixed norms. Some key references are given below.

References


Ondokuz Mayıs University, Faculty of Arts and Science, Department of Mathematics, Atakum, Samsun-Turkey, ayeses@omu.edu.tr
We revisit the space $\ell^p$ of $p$-summable sequences of real numbers. In particular, we show that this space is actually contained in a (weighted) inner product space. The relationship between $\ell^p$ and the (weighted) inner product space that contains $\ell^p$ is studied. For $p > 2$, we also obtain a result which describe how the weighted inner product space is associated to the weights.

References

79 An Alternative Proof of a Tauberian Theorem for Abel Summability Method
Ibrahim Çanak and Ümit Totur

Using a corollary to Karamata’s main theorem [Math. Z. 32 (1930), 319–320], we prove that if a slowly decreasing sequence of real numbers is Abel summable, then it is convergent in the ordinary sense.

References

[5] G. H. Hardy, Divergent series, Oxford University Press, 1956,
80 Positive Periodic Solutions for a Nonlinear First Order Functional Dynamic Equation by a New Periodicity Concept on Time Scales

Erbil Çetin and F. Serap Topal

In this talk, we consider the existence, multiplicity and nonexistence of positive periodic solutions in shifts $\delta_{\pm}$ for the nonlinear functional dynamic equation on a periodic time scale in shifts $\delta_{\pm}$ with period $P \in (t_0, \infty)$. By using the Krasnoselskii fixed point theorem and Leggett-Williams multiple fixed point theorem, we present different sufficient conditions for the existence of at least one, two or three positive solutions in shifts $\delta_{\pm}$ of the problem on time scales. We extend and unify periodic differential, difference, $h$-difference and $q$-difference equations and more by a new periodicity concept on time scales.

References


Erbil Çetin: Ege University, Faculty of Science, Department of Mathematics, Bornova Izmir-Turkiye, erbil.cetin@ege.edu.tr
Fatma Serap Topal: Ege University, Faculty of Science, Department of Mathematics, Bornova Izmir-Turkiye, f.serap.topal@ege.edu.tr
In this note, we present the potential flow field around a torus. We use the naturally fit toroidal coordinates system to recast the governing equation. We show that the governing equation has a series solution in terms of toroidal functions with coefficients that satisfy a three-term recurrence relation.
82 On $\mathbb{B}^{-1}$-Convex Functions and Some Inequalities
Gabil Adilov and Ilknur Yesilce

A subset $U$ of $\mathbb{R}^n_+$ is $\mathbb{B}^{-1}$-convex if for all $x, y \in U$ and all $\lambda \in [1, \infty)$ one has
$$\lambda x \wedge y = (\min \{\lambda x_1, y_1\}, \min \{\lambda x_2, y_2\}, \ldots, \min \{\lambda x_n, y_n\}) \in U.$$ 

For each kind of convex functions, some inequalities such as Hermite-Hadamard inequalities, Jensen inequalities, etc., are obtained by many authors ([1], [2], [3], etc.). In this work, similar inequalities are analyzed for $\mathbb{B}^{-1}$-convex functions.

References


83 On the Global Behaviour of a Higher Order Difference Equation
Yasin Yazlik, D.Turgut Tollu and Necati Taskara

In this paper, we deal with the behavior well-defined solutions of the difference equation

\[ x_n = ax_{n-1} + \frac{b + x_{n-m} - ax_{n-m-1}}{c + x_{n-m} - ax_{n-m-1}}, \quad n \in \mathbb{N}_0, \]

where \( \mathbb{N}_0 = \mathbb{N} \cup \{0\} \), the parameters \( a, b \) and \( c \) and the initial conditions \( x_{-m-1}, x_{-m}, \ldots, x_{-1}, x_0 \) are real numbers.

References

[8] I. Yalcinkaya, On the difference equation \( x_{n+1} = \alpha + \frac{x_{n-m}}{x_n} \), Discrete Dynamics in Nature and Society (2008), Article ID: 805460, 8 pages.
[10] E.M.E. Zayed and M.A. El-Moneam, On the rational recursive sequence \( x_{n+1} = \gamma x_{n-k} + \frac{a x_n + b x_{n-k}}{c x_n - d x_{n-k}} \), Bulletin of the Iranian Mathematical Society 36(1) (2010), 103-115.
[12] S. Ozen, I. Ozturk and F. Bozkurt, On the recursive sequence \( y_{n+1} = \alpha + \frac{y_{n-k}}{y_n} + \frac{y_{n-k}}{y_n} \), Applied Mathematics and Computation 188 (2007), 180-188.
84 Identifying an Unknown Time Dependent Coefficient for Quasilinear Parabolic Equations
Fatma Kanca and Irem Baglan

This talk deals with the mathematical analysis of the inverse problem of identifying the unknown time-dependent coefficient in the quasilinear parabolic equation with the nonlocal boundary and integral overdetermination conditions. The existence, uniqueness and continuously dependence upon the data of the solution are proved by iteration method in addition to the numerical solution of this problem is considered with an example.

References


Fatma Kanca: Department of Management Information Systems, Kadir Has University, 34083, Istanbul, Turkey, fatma.kanca@khas.edu.tr

Irem Baglan: Department of Mathematics, Kocaeli University, Kocaeli 41380, Turkey, isakinc@kocaeli.edu.tr
On Special Semigroup Classes and Congruences on Some Semigroup Constructions
Seda Oğuz and Eylem Güzel Karpuz

The purpose of this study is to consider under which conditions Bruck-Reilly and generalized Bruck-Reilly*-extensions might belong to some special classes of semigroups such as regular, unit regular, completely regular, inverse, orthodox and E-unitary inverse. In addition to this we qualify the general types of congruences on generalized Bruck-Reilly*-extension.

References


Seda Oğuz: Cumhuriyet University, Education Faculty, Department of Secondary School Science and Mathematics Education, Sivas-Türkiye, sdaoguz@gmail.com
Eylem Güzel Karpuz: Karamanoğlu Mehmetbey University, Kamil Özdag Science Faculty, Department of Mathematics, Karaman-Türkiye, eylem.guzel@kmu.edu.tr
The Rate of Pointwise Convergence of $q-$Szász Operators

Tuncer Acar

In this talk, we mainly study on Voronovskaya type theorems for $q-$Szász operators, defined in [Mahmudov, N. I., On $q-$parametric Szász-Mirakjan Operators, Mediterr. J. Math., 7 (2010), 297-311], and their $q-$derivatives. To do this, we consider the weighted spaces of approximation functions and related weighted modulus of continuity and we obtain quantitative Voronovskaya type theorem in terms of weighted modulus of continuity of $q-$derivatives of approximating function. By this way, we either obtain the rate of pointwise convergence of $q-$Szász operators and their derivatives or we present these results for continuous functions although classical ones are valid for differentiable functions.

References

87 Some Properties of Cohomology Groups for Graphs
Özgür Ege and Ismet Karaca

In this work, we would like to construct cohomology theory for graphs. For this purpose, we deal with the singular homology of graphs and take its dual structure. We then give the Universal coefficient theorem for singular cohomology in graphs. We show that the Künneth theorem doesn’t yield for graphs. We also give explanatory examples on the topic. Lastly, we deal with fixed point properties of graphs using singular cohomology groups.

References
Stability with initial data difference of nonlinear delay differential equations is introduced and studied. This type of stability generalizes the known in the literature concept of stability. It gives us the opportunity to compare the behavior of two nonzero solutions which initial values as well as initial intervals are different. Lyapunov functions as well as comparison results for scalar ordinary differential equations have been employed. Several examples will be given to illustrate both concepts and obtained results.

References


Ravi Agarwal: Texas A&M University-Kingsville, Department of Mathematics, Kingsville, TX 78363, USA, agarwal@tamuk.edu
Snezhana Hristova: Plovdiv University, Faculty of Mathematics and Informatics, Department of Applied Mathematics, Bulgaria, snehril@uni-plovdiv.bg

Research was partially supported by Fund Scientific Research MU13FMI002, Plovdiv University.
On Ramanujan’s Summation Formula, his General Theta Function and a Generalization of the Borweins’ Cubic Theta Functions

Chandrashekar Adiga

In Chapter 16 of his second notebook, Ramanujan develops two closely related topics, q-series and theta-functions. In the first part of the talk, we discuss about Ramanujan’s summation formula and his general theta function. The Borwein brothers have introduced and studied three cubic theta functions. Many generalizations of these functions have been studied as well. In the second part of the talk, we introduce a new generalization of these functions and establish general formulas that are connecting our functions and Ramanujan’s general theta function. Many identities found in the literature follow as a special case of our identities. We further derive general formulas for certain products of theta functions.

References

This contribution deals with the numerical analysis using the semi-implicit scheme with respect to t-variable combined with finite element spacial approximation applied in parabolic variational inequalities arising from pricing of American option. Where the presented numerical result is efficient.

References

91 The Smoothness of Convolutions of Zonal Measures on Compact Symmetric Spaces
Sanjiv Kumar Gupta and Kathryn Hare

We prove that for every compact symmetric space, $G_c/K$, of rank $r$, the convolution of any $(2r+1)$ continuous, $K$-bi-invariant measures is absolutely continuous with respect to the Haar measure on $G_c$. We also prove that the convolution of $(r+1)$ continuous, $K$-invariant measures on the $-1$ eigenspace in the Cartan decomposition of the Lie algebra of $G_c$ is absolutely continuous with respect to Lebesgue measure. These results are nearly sharp.

References

92 A Tauberian Theorem for the Weighted Mean Method of Summability of Sequences of Fuzzy Numbers

Zerrin Önder, Sefa Anıl Sezer and Ibrahim Çanak

The notion of fuzzy set was realized by many researchers who are interested in Mathematics, Computer Science and Engineering and the idea was applied for studies in different branches of science from different aspects. One of the areas which was applied it is the summability theory as well. In this talk, we focus on the weighted mean method of summability of sequences of fuzzy numbers and present a Tauberian theorem of slowly decreasing type. References

References


93 Asymptotic Constancy for a System of Impulsive Delay Differential Equations
Fatma Karakoç and Hüseyin Bereketoğlu

In this talk, we investigate a class of impulsive delay differential equations system. First, convergence of solution is proved. Then a formula is obtained for the limit of the solution.

References
94  An Extension $w$ with $\text{rank}w = 3$ of a Valuation $v$ on a Field $K$ with $\text{rank}v = 2$ to $K(x)$

Figen Öke

Let $v = v_1ov_2$ be a valuation on a field $K$ with $\text{rank}v = 2$. In this study an extension $w = w_1ow_2ow_3$ of $v$ such that $\text{rank}w = 3$ and $w_2$ is trivial over the residue field $k_{v_1}$ is defined and its properties are investigated.

References

95 Inclusions Between Weighted Orlicz Space

Alen Osancliol

Let \((X, \Sigma, \mu)\) be a measure space and \(\Phi\) be a Young function. The weighted Orlicz space with weight \(\omega\) is denoted by \(L^\Phi_\omega(X)\) and it is a natural generalization of the weighted Lebesgue space in which characterization of inclusion is well known. In this talk, we investigate the inclusion between weighted Orlicz spaces \(L^\Phi_1(X)\) and \(L^\Phi_2(X)\) with respect to Young functions \(\Phi_1\), \(\Phi_2\) and weights \(w_1, w_2\). We also define the weighted Orlicz norm and show that the inclusion map is continuous. Moreover, in case of \(X = \mathbb{R}^n\) with Lebesgue measure on \(\mathbb{R}^n\), we give a necessary and sufficient conditions on weights for the equality of two weighted Orlicz spaces when \(\Phi_1 = \Phi_2\).

References


Sabancı University, Faculty of Engineering and Natural Sciences, Tuzla, Istanbul-Turkey, osancliola@sabanciuniv.edu
This work was supported by the Scientific Research Projects Coordination Unit of Istanbul University, Project number 14671.
96  On the Some Graph Parameters for Special Graphs
Nihat Akgünêş, Ahmet Sinan Çevik and Ismail Naci Cangül

In this talk, we discuss some graph parameters for important special graphs, for instance, ladder graph. Actually, the $n$-ladder graph can be defined as $P_2 \Box P_n$, where $P_n$ is a path graph. We aim to implement some algorithms for computing the some important graph parameters for that graphs. We will investigate some good result for some parameters of that graphs.

References

A Note on the Dirichlet-Neumann First Eigenvalue of a Family of Polygonal Domains in $\mathbb{R}^2$

A.R. Aithal and Acushla Sarswat

Let $\mathcal{P}_1$ and $\mathcal{P}_0$ be closed, regular, convex, concentric polygons having $n$ sides in $\mathbb{R}^2$ such that the circumradius of $\mathcal{P}_0$ is strictly less than the inradius of $\mathcal{P}_1$. We fix $\mathcal{P}_1$ and vary $\mathcal{P}_0$ by rotating it about its center. Let $\Omega$ be the interior of $\mathcal{P}_1 \setminus \mathcal{P}_0$. In this paper we examine the behaviour of the first Dirichlet-Neumann eigenvalue $\lambda_1(\Omega)$ through a variation of the domain.

References


A.R. Aithal: Department of Mathematics, University of Mumbai, Vidyanagari, Mumbai 400 098, India, aithal86@gmail.com

Acushla Sarswat: Department of Mathematics, University of Mumbai, Vidyanagari, Mumbai 400 098, India, acushla.narayanan@gmail.com
An Approach to the Numerical Verification of Solutions for Variational Inequalities

C. S. Ryoo

In this talk, we describe a numerical method to verify the existence of solutions for a unilateral boundary value problems for second order equation governed by the variational inequalities. It is based on Nakao’s method by using finite element approximation and its explicit error estimates for the problem. Using the Riesz present theory in Hilbert space, we first transform the iterative procedure of variational inequalities into a fixed point form. Then, using the Schauder fixed point theory, we construct a high efficiency numerical verification method that through numerical computation generates a bounded, closed, convex set in which includes the approximate solution. Finally, a numerical example is illustrated.

References


Department of Mathematics, Hannam University, Daejeon 306-791, Korea, ryoocs@hnu.kr
99 Local Rings and Projective Coordinate Spaces
Fatma Özen Erdoğan and Süleyman Çiftçi

In this paper, some properties of modules constructed over the real plural algebra \( A \) are investigated and also a module over the linear algebra of matrix \( K = M_{mm}(\mathbb{R}) \) is constructed. Then, projective coordinate spaces over a local ring \( R \) are addressed. Finally, the concept of a projective space over a vector space is generalized to a space over a module by the help of equivalence classes.

References

[1] B. R. McDonald, Geometric algebra over local rings, New York: Marcel Dekker, 1976,
100 An Improved Numerical Solution of the Singular Boundary Integral Equation of the Compressible Fluid Flow Around Obstacles Using Modified Shape Functions
Luminita Grecu

In this work an improved numerical solution of the singular boundary integral equation of the 2D compressible fluid flow around obstacles is obtained by a boundary element method based on modified shape functions and cubic boundary elements. The singular boundary integral equation with sources distribution is considered in this paper, and, for its discretization, cubic boundary elements are used. The integrals of singular kernels are evaluated using modified shape functions which are deduced by using series expansions for the basis functions choose for the local approximation models. A computer code is made using Mathcad programming language, and based on it some particular cases are solved. In order to validate the proposed method, comparisons between numerical solutions and exact ones are performed for the considered test problems. A comparison between the numerical solution obtained by the method proposed and the one obtained by a method that also uses cubic boundary elements but doesn’t use modified shape functions for evaluating the singularities is also made.

References

University of Craiova, Department of Applied Mathematics, Craiova, Romania, lumigrecu@hotmail.com
101 New Aspects of Calculating Volumes in $\mathbb{E}_n$
Daniela Bittnerová and Daniela Bímová

The talk presents an alternative approach to the calculation of the volumes of solids in $n$-dimensional Euclidean space and shows some applications of that theory, including the proof of the formula for it. The mentioned method uses basic topological properties, among others. To solve volumes of solids, we must find suitable parametric descriptions of surface areas of given solids. These surface areas must be smooth or piecewise smooth areas in Euclidean space of the corresponding dimensions. The advantage of the theory could be in the using of integrals of the dimension less then $n$. This contribution also refers to correspondence between the curvilinear and surface integral theory for calculations of areas of closed figures, respectively volumes of solids, and the results of the alternative theory. However, it is kept generally in $n$-dimensional space for the alternative theory.

References

Daniela Bittnerová: Technical University of Liberec, Faculty of Science, Humanities and Education, Department of Mathematics and Didactics of Mathematics, Liberec - Czech Republic, daniela.bittnerova@tul.cz
Daniela Bímová: Technical University of Liberec, Faculty of Science, Humanities and Education, Department of Mathematics and Didactics of Mathematics, Liberec - Czech Republic, daniela.bimova@tul.cz

The paper was supported by the project SGS - FP - TUL 2014 "Nonlinear Parameterization - applications using graphic software". Special thanks to students H. Vacatová, P. Vurmová, and D. Vacuta for their help with solving examples.
Applications of an Alternative Methods for Volumes of Solids of Revolution
Daniela Bímová and Daniela Bittnerová

In this talk, we connect the contribution New Aspects of Calculating Volumes in $\mathbb{E}_n$ in this congress where an alternative theory for calculations of volumes of solids in the $n$-dimensional Euclidean space is presented. Now we discuss the application of that theory to volumes of solids of revolution with circular and elliptical perpendicular sections (sphere, toroid, axoid, horn toroid, melanoid). The proofs of the formulas of the alternative theory mentioned above are given for that type of solids. Using the mentioned theory, the formulas of volumes computed solids of revolution are simpler than the general ones are.

References


Daniela Bímová: Technical University of Liberec, Faculty of Science, Humanities and Education, Department of Mathematics and Didactics of Mathematics, Liberec - Czech Republic, daniela.bimova@tul.cz

Daniela Bittnerová: Technical University of Liberec, Faculty of Science, Humanities and Education, Department of Mathematics and Didactics of Mathematics, Liberec - Czech Republic, daniela.bittnerova@tul.cz

The paper was supported by the project SGS - FP - TUL 2014 "Nonlinear Parameterization - applications using graphic software". Special thanks to students H. Vucatová, P. Vurmová, and D. Vucata for their help with solving examples and drawing figures.
103 On Certain Sums of Fibonomial Coefficients
Emrah Kılıç and Aynur Yalçınker

In this talk, we present some classes of sums formulas including Fibonomial coefficients with finite product of generalized Fibonacci and Lucas numbers as coefficients. We translate everything into q-notation and then use generating function and Rothe’s identity to prove them.

References

Emrah Kılıç: TOBB University of Economics and Technology, Mathematics Department, 06560 Ankara, Turkey, ekilic@etu.edu.tr
Aynur Yalçınker: Selçuk University, Faculty of Science, Department of Mathematics, Campus 42075, Konya, Turkey, ayalciner@selcuk.edu.tr.
Null Generalized Helices of a Null Frenet Curve in $L^4$

Esen Iyigün

In this paper, we study the null generalized helices in view of curvature functions and harmonic curvatures in 4-dimensional Lorentzian space for two time-like and two null vectors by using the Frenet frame in [2] for a null curve.

References

105 Geometrical Methods and Numerical Computations for Prey-Predator Lotka-Volterra Systems
Adela Ionescu, Romulus Militaru and Florian Munteanu

The purpose of this paper is to study symmetries and conservation laws for the mathematical model of the multi-species interactions, given by Volterra-Lotka equations. We will recall the Hamilton-Poisson realisations of 2D and 3D Volterra-Lotka systems and we use the geometric formalism to obtain new conservation laws starting from symmetries. Our study is a interplay between dynamical systems geometrical theory and computational calculus of dynamical systems, knowing that the theory provides a framework for interpreting numerical observations and foundations for algorithms.

References


Adela Ionescu: Department of Applied Mathematics, University of Craiova, Al. I. Cuza 13, Craiova 200585, Romania, adela0404@yahoo.com
Romulus Militaru: Department of Applied Mathematics, University of Craiova, Al. I. Cuza 13, Craiova 200585, Romania, militaruromulus@yahoo.com
Florian Munteanu: Department of Applied Mathematics, University of Craiova, Al. I. Cuza 13, Craiova 200585, Romania, munteanufm@gmail.com

This work was partially supported by the grant number 19C/2014, awarded in the internal grant competition of the University of Craiova.
This paper deals with the fractional order dengue epidemic model. The stability of disease free and positive fixed points is studied. Adams–Bashforth–Moulton algorithm have been used to solve and simulate the system of differential equations.
The topological indices are the graph invariants obtained from the molecular graphs corresponding to the structural features of organic molecules. A topological index of a chemical compound characterizes the compound and obeys a particular rule. In this paper, we find the Augmented Zagreb index, Zagreb Co–indices, Zagreb Co–indices polynomials and Augmented Zagreb polynomials for Phenylene and Hexagonal Squeeze.
108 A Note on Class Numbers of Real Quadratic Fields with Certain Fundamental Discriminants
Ayten Pekin

ONO, proved a theorem in by applying Sturm’s Theorem on the congruence of modular form to Cohen’s half integral weight modular forms. Later, Dongho Byeon proved a theorem and corollory by refining Ono’ methods. In this paper, we will give a theorem for certain real quadratic fields by considering above mentioned studies. To do this, we shall obtain an upper bound different from current bounds for $L(1, \chi_D)$ and use Dirichlet’s class number formula.
109 On Three Dimensional Dynamical Systems on Time Scales

Elvan Akın

In this talk, motivated by Thandapani and Ponnimal [6], we investigate oscillation and asymptotic properties of solutions of three dimensional systems of first order dynamic equations on a time scale, nonempty closed subset of real numbers. The theory of dynamic equations on time scales has been created in order to unify continuous and discrete analysis, see books by Bohner and Peterson [4] and [5]. We also refer the readers to manuscripts by Akin, Dosla, Lawrence [2], [3] and Akgul and Akin [1].

References

110  
On the Difference Equation System  

\[ x_{n+1} = \frac{1+y_n}{y_n}, \quad y_{n+1} = \frac{1+y_n}{x_n}, \]

Necati Taskara, Durhasan Turgut Tollu and Yasin Yazlik

In this paper, we mainly consider the system of difference equations

\[ x_{n+1} = \frac{1+y_n}{y_n}, \quad y_{n+1} = \frac{1+y_n}{x_n}, \quad n \in \mathbb{N}_0 \]

where initial conditions \( x_0 \) and \( y_0 \) are real numbers such that the denominators are always nonzero. We give exact information about the behavior of solutions of the system.

References


Necati Taskara: Selcuk University, Faculty of Science, Department of Mathematics, Selçuklu, Konya-Turkiye, ntaskara@selcuk.edu.tr
D.T. Tollu: Necmettin Erbakan University, Faculty of Science, Department of Mathematics-Computer Sciences, Meram, Konya-Türkiye, dttollu@konya.edu.tr
Y. Yazlik: Nevsehir Haci Bektas Veli University, Faculty of Science and Art, Department of Mathematics, 50300, Nevşehir-Türkiye, yyazlik@nevsehir.edu.tr
111 The Binomial Transforms of Tribonacci and Tribonacci-Lucas Sequences
Nazmiye Yilmaz and Necati Taskara

In this study, we apply the binomial transforms to Tribonacci and Tribonacci-Lucas sequences. Also, the Binet formulas, summations, generating functions of these transforms are found using recurrence relations. Finally, we illustrate the relation between these transforms by deriving new formulas.

References
[7] Y. Yazlik, N. Yilmaz, N. Taskara, The Binomial Transforms of the generalized (s,t)-matrix sequence, 4th International Conference of Matrix Analysis and Applications (ICMAA2013), Konya 2013,
On the Random Functional Central Limit Theorems with Almost Sure Convergence for Subsequences
Zdzislaw Rychlik

In this talk, we present functional random-sum central limit theorems with almost sure convergence for independent non-identically distributed random variables. We consider the case where the summation random indices and partial sums are independent. In the past decade several authors have investigated the almost sure functional central limit theorems and related ‘logarithmic’ limit theorems for partial sums of independent random variables. We extend this theory to almost sure versions of the functional random-sum central limit theorems for subsequences.

References

113 Some Fixed Point Theorems for a Pair of Mappings in Complex Valued b-Metric Spaces
Aiman Mukheimer

In this paper, we generalize and study the results of M. Kutbi et al, by improving the conditions of the contraction which is the product and the quotient of metrics, and we establish the existence and uniqueness of common coupled fixed points for a pair of mappings on complex valued b-metric spaces.
Some Characterizations of Slant Curves on Unit Dual Sphere $\tilde{S}^2$

Seda Oral and Mustafa Kazaz

In this paper, we consider the dual Darboux frame $\{\tilde{e}, \tilde{t}, \tilde{g}\}$ of a ruled surface in Euclidean 3-space $E^3$. By the aid of the E.Study Mapping, a ruled surface can be consider as a dual spherical curve. Then, we define some new types of curves on unit dual sphere $\tilde{S}^2$, called slant dual curves that each vector of Darboux frame makes a constant dual angle with some fixed directions in dual 3-space $\tilde{D}^3$. Furthermore, we give some characterizations for a curve to be a slant dual curve which is important for differential geometry, surface geometry and especially surface design theory.

References


Seda Oral: Celal Bayar University, Muradiye, Manisa, Turkey, sdr1@hotmail.com
Mustafa Kazaz: Celal Bayar University, Faculty of Science and Arts, Department of Mathematics, Muradiye Campus, Manisa, Turkey; mustafa.kazaz@cbu.edu.tr
On Solving Some Partial Differential Equations
Ümit Sarp and Sebahattin Iikikardes

In this talk, the numerical solutions of some partial differential equations have been analyzed by using Differential Transform Method and the obtained results are compared with other numerical methods. The study show us that the results obtained by using Differential Transform Method are compatible with the existing solutions. Also Differential Transform Method can easily be adapted to many computer programs.

References

116 Some Spectrum Properties in $C^*$- Algebras

Nilay Sager and Hakan Avcı

We show that if $\varphi$ is a $*$- homomorphism between unital commutative $C^*$- algebras $A$ and $B$ with $A^{-1} = \varphi^{-1}(B^{-1})$, then property of mapping of spectrum is satisfied and adjoint mapping $\varphi^* : \Delta(B) \to \Delta(A)$ is surjective, that is, maximal ideal space of $B$ maps to maximal ideal space of $A$.

References


Nilay Sager: Ondokuz Mayis University, Faculty of Arts and Sciences, Department of Mathematics, Kurupelit, Samsun-Turkey, nilay.sager@omu.edu.tr
Hakan Avcı: Ondokuz Mayis University, Faculty of Arts and Sciences, Department of Mathematics, Kurupelit, Samsun-Turkey, hakanav@omu.edu.tr
117 On Function Spaces with Fractional Fourier Transform in the Weighted Lebesgue Spaces
Erdem Toksoy and Ayşe Sandıkçı

Let $w$ and $\omega$ be weight functions on $\mathbb{R}^d$. In this work, we define $A_{w,\omega}^\alpha(\mathbb{R}^d)$ to be the vector space of $f \in L^1_w(\mathbb{R}^d)$ such that the fractional Fourier transform belongs to $L^p_\omega(\mathbb{R}^d)$ for $1 \leq p < \infty$. We endow this space the sum norm $\|f\|_{A_{w,\omega}^\alpha} = \|f\|_{1,w} + \|F_\alpha f\|_{p,\omega}$ and show that $A_{w,\omega}^\alpha(\mathbb{R}^d)$ becomes a Banach space and invariant under time frequency shifts. Further we show that the mapping $y \rightarrow T_y f$ is continuous from $\mathbb{R}^d$ into $A_{w,\omega}^\alpha(\mathbb{R}^d)$ and the mapping $z \rightarrow M_z f$ is continuous from $\mathbb{R}^d$ into $A_{w,\omega}^\alpha(\mathbb{R}^d)$ and $A_{w,\omega}^\alpha(\mathbb{R}^d)$ is a Banach Module over $L^1_w(\mathbb{R}^d)$ with $\Theta$ convolution operation. At the end of this work, we discuss inclusion properties of these spaces. Some key references are given below.

References
118 Some Convergence Results for Modified SP-Iteration Scheme in Hyperbolic Spaces
Aynur Şahin and Metin Başarır

In this study, we prove some strong and $\Delta$-convergence theorems for a modified SP-iteration scheme for total asymptotically nonexpansive mappings in hyperbolic spaces by employing recent technical results of Khan et. al. [An implicit algorithm for two finite families of nonexpansive maps in hyperbolic spaces, Fixed Point Theory Appl. (2012) 2012:54]. The results presented here extend and improve some well known results in the current literature.

References

Aynur Şahin: Sakarya University, Faculty of Sciences and Arts, Department of Mathematics, Sakarya-Turkey, ayuce@sakarya.edu.tr
Metin Başarır: Sakarya University, Faculty of Sciences and Arts, Department of Mathematics, Sakarya-Turkey, basarir@sakarya.edu.tr
This work was supported by the Commission of Scientific Research Projects of Sakarya University, Project number 2013-02-00-003.
Characterization of $W^p$–type of Spaces Involving Fractional Fourier Transform
S.K. Upadhyay and Anuj Kumar

The characterizations of $W^p$–type of spaces and mapping relations between $W$ and $W^p$ type of spaces are discussed by using fractional Fourier transform. The uniqueness of Cauchy problems is also investigated by using the same transform.
120 Rates of Convergence for an Estimator of a Density Function Based on Hermite Polynomials
Elif Erçelik and Mustafa Nadar

Let $X_1, X_2, \ldots$ be a sequence of i.i.d random variables with unknown density function $f$. We investigate the mean integrated square error convergency rate of an estimator based on Hermite polynomials for an unknown density function $f$ which incorporate certain delta sequences.

Walter [8] and Greblicki and Pawlak [1] studied the mean integrated square error (MISE) convergency rate of the estimator based on Hermite series method. Later on, Letellier [2] studied MISE convergency rate of the estimator based on delta sequences by using Jakobi polynomials. In this work we obtained MISE convergency rate of the estimator based on delta sequences by using Hermite polynomials as $O\left( N^{-r+1}\right)$ which is faster than that of Walter and Letellier and slower than of Greblicki and Pawlak.

References
121  Estimation of Reliability in Multicomponent Stress-Strength Model Based on Marshall–Olkin Weibull Distribution
Mustafa Nadar and Fatih Kızılaslan

We consider a system which have \( k \) identical strength components and each component is a random vector \((X_{11}, X_{12}), (X_{21}, X_{22}), \ldots, (X_{k1}, X_{k2})\) following Marshall–Olkin Bivariate Weibull distribution with Parameters \((\sigma, \theta_1, \theta_2, \theta_3)\). Let \( Z_i = \min(X_{i1}, X_{i2}), \ i = 1, \ldots, k \). The system is regarded as operating only if at least \( s \) out of \( k \) \((1 \leq s \leq k)\) strength variables exceeds a random stress \( Y \) which has Weibull distribution with parameters \((\sigma, \alpha)\). Then, when \( \sigma \) is known, the reliability \( R_{s,k} \) in the described multicomponent stress-strength model is obtained as

\[
R_{s,k} = \sum_{i=s}^{k} \sum_{j=0}^{k-i} \binom{k}{i} \binom{k-i}{j} \frac{(-1)^j \alpha}{[\theta(i+j) + \alpha]}
\]

where \( \theta = \theta_1 + \theta_2 + \theta_3 \).

Finally, a Monte Carlo Simulation study is performed to compare the reliability using both maximum likelihood and Bayesian estimation.

References

Mustafa Nadar: Istanbul Technical University, Department of Mathematical Engineering, Istanbul, Turkey, nadar@itu.edu.tr
Fatih Kızılaslan: Gebze Institute of Technology, Department of Mathematics, Kocaeli, Turkey, kizilaslan@gyte.edu.tr
122 Some New Results on The $Π$–Regularity of Some Monoids
Ahmet Emin and Fırat Ateş

In this talk we give some new results on the regularity and $Π$-Regularity of Schetzenberger and Crossed products of monoids.

References

On Traveling Wave Solutions of Fractional Differential Equations

Şerife Müge Ege and Emine Mısırlı

In this work, the space-time fractional Hirota-Satsuma-Coupled KdV equation and the space-time fractional Fokas equation are handled by using the modified Kudryashov method. Consequentially, many analytical exact solutions are obtained including rational solutions and symmetrical Fibonacci function solutions. This method is powerful, effectual and can be used as an alternative to constitute new solutions of various types of fractional differential equations applied in scientific fields.

References


Şerife Müge Ege: Ege University, Faculty of Science, Department of Mathematics, Bornova, İzmir-Turkiye, serife. muge.ege@ege.edu.tr
Emine Mısırlı: Ege University, Faculty of Science, Department of Mathematics, Bornova, İzmir-Turkiye, emine. misirli@ege.edu.tr
This research is supported by Ege University, Scientific Research Project (BAP), Project Number: 2012FEN037.
124 On the Oscillation of Second Order Nonlinear Neutral Dynamic Equations on Time Scales
Elvan Akın, Can Murat Dikmen and Said Grace

In this talk, we investigate some new oscillation criteria and give sufficient conditions to ensure that all solutions of second order nonlinear neutral dynamic equations with distributed deviating arguments are oscillatory on a time-scale $T$, via comparison with second order nonlinear dynamic equations whose oscillatory character are known and extensively studied in the literature.

References

Elvan Akın: Department of Mathematics and Statistics, Missouri University of Science and Technology, Rolla, MO 65409, USA, akine@mst.edu
Can Murat Dikmen: Bulent Ecevit Universitesi, Fen-Edebiyat Fakultesi, Matematik Bolumu, 67100 Zonguldak, Turkey, canmuratdikmen@beun.edu.tr
Said Grace: Department of Engineering Mathematics, Faculty of Engineering, Cairo University, Orman, Gizza 12221, Egypt, srgrace@eng.cu.edu.eg
A Collocation Approach to Parabolic Partial Differential Equations

Kubra Erdem Bicër and Salih Yalçınbaş

In this study, a collocation approach is presented to solve parabolic partial differential equations. For this, an approximate method based on Bernoulli polynomials is developed. The method we have used consists of reducing the problem to a matrix equation which corresponds to a system of linear algebraic equations. The obtained matrix equation is based on the matrix forms of Bernoulli polynomials and their derivatives by means of collocations. Also error analysis and a numerical example are presented to demonstrate the validity and applicability of the technique.

References


Kubra Erdem Bicer: Celal Bayar University, Faculty of Science, Department of Mathematics, Manisa, Turkey, kubra.erdem@cbu.edu.tr
Salih Yalcinbas: Celal Bayar University, Faculty of Science, Department of Mathematics, Manisa, Turkey, salih.yalcinbas@mu.edu.tr
As is known from [1, 3, 5], simplicial algebras with Moore complex of length 1 (2) lead to crossed (2-crossed) modules that are related to Koszul complex and André-Quillen homology constructions for use in homotopical and homological algebra. Homotopy of crossed complex morphisms on groupoids was first introduced by Brown and Higgins in [2]. Then Martins clearly defined and formulated the homotopy of crossed module morphisms on groups in [4]. In this study, we will define the homotopy of crossed module morphisms on commutative algebras. Upon this, we will define a map that carries the homotopy from simplicial algebras to crossed modules, and vice versa; as a part of the functors between them.

References

On Algebraic Semigroup and Graph-Theoretic Properties of a New Graph
Ahmet Sinan Çevik, Eylem Güzel Karpuz and I.Naci Cangül

In this talk, firstly, we define a new graph based on the semi-direct product of some monoids, and then investigate the interplay between the semi-direct product over monoids and the graph-theoretic properties of this product in terms of its relations.

References
A semigroup \( P \) embeds in a group \( G \) if there exists a monomorphism from \( P \) into \( G \), and then a semigroup \( P \) is embeddable into group, or is group-embeddable, if there exists some group \( G \) into which \( P \) embeds. In this talk, we discuss embeddability of a semigroup in a group via the Gröbner-Shirshov basis theory. Then by considering braid groups, we give some examples.

Some parts of this talk have been prepared from the joint work [3].

References


An Application of Fixed Point Theorems to a Problem for the Existence of Solutions of a Nonlinear Ordinary Differential Equations of Fractional Order

Masashi Toyoda

In this talk, we consider the Cauchy problem in a class of fractional differential equations. Let $1 < \alpha \leq 2$. We consider the Cauchy problem

\[
\begin{aligned}
D_0^\alpha u(t) &= p(t)t^{\alpha-1}u(t)^{\sigma}, \\
\lim_{t\to 0^+} u(t) &= 0, \\
\lim_{t\to 0^+} \frac{u'(t)}{t^{\alpha-2}} &= (\alpha - 1)\lambda
\end{aligned}
\]

where $p$ is continuous, $\alpha, \sigma, \lambda \in \mathbb{R}$ with $\sigma < 0$, $\lambda > 0$ and $D_0^\alpha$ is the Riemann-Liouville fractional derivative. If $\alpha = 2$, then this problem is the problem in [8]. This is a joint work of Professor Toshiharu Kawasaki.

References


A Numerical Solution for Vibrations of an Axially Moving Beam

Duygu Dönmez Demir and Erhan Koca

The dynamic response of an axially elastic, tensioned beam with constant velocity is considered. The equation of motion is solved by using Adomian Decomposition Method (ADM) and Method of Multiple Time Scales. We obtain displacement one at a time. Also, the comparison of (ADM) with the perturbation method for this model is presented. The computed results are indicated numerically.

References


Duygu Dönmez Demir: Celal Bayar University, Faculty of Art & Science, Department of Mathematics, Muradiye, Manisa-Turkiye, duygu.donmez@cbu.edu.tr
Erhan Koca: Celal Bayar University, Faculty of Art & Science, Department of Mathematics, Muradiye, Manisa-Turkiye
131 Some Principal Congruence Subgroups of the Extended Hecke Groups and Relations with Pell-Lucas Numbers

Zehra Sarıgedik, Sebahattin Ikikardeş and Recep Şahin

In this talk, we consider the Hecke groups $H(\sqrt{m})$ and the extended Hecke groups $\overline{H}(\sqrt{m})$ for $m = 2$ or 3. Firstly, we give the generators of the principal congruence subgroups $H_2(\sqrt{m})$ and $\overline{H}_2(\sqrt{m})$ of $H(\sqrt{m})$ and $\overline{H}(\sqrt{m})$, respectively. Then, using some of these generators, we define a sequence $V_k$ which is a generalized version of the Pell-Lucas numbers sequence $Q_k$ given in [9] for the modular group, in the extended Hecke groups $H(\sqrt{m})$ for $m = 1, 2$ and 3.

References


Zehra Sarıgedik: Celal Bayar University, Koprubasi Vocational High School, Koprubasi/Manisa-Turkiye, zehra.sarigedik@cbu.edu.tr
Sebahattin Ikikardeş: Balikesir University, Faculty of Science, Department of Mathematics, Balikesir-Turkiye, skardes@balikesir.edu.tr
Recep Şahin: Balikesir University, Faculty of Science, Department of Mathematics, Balikesir-Turkiye, rsahin@balikesir.edu.tr
On the Metric Geometry and Regular Polyhedrons
Temel Ermiş and Rüstem Kaya

The Platonic solids known as the regular polyhedrons, all of whose faces are congruent regular polygons, and where the same number of faces meet at every vertex. The regular polyhedrons were first described by Plato. That is the reason why they called as Platonic solids.

In the previous studies, hexahedron and octahedron associated to maximum and taxicab metrics, respectively. In this work, we find two new metrics of which unit spheres are the dodecahedron and icosahedron, and study the structure of related spaces.

References

133 On the Addition of Collinear Points in Some PK-Planes
Basri Celik and Abdurrahman Dayioglu

In this study, we extend the addition of points which is defined in [3] for the points of the special line $OU = [0, 1, 0]$, to the points of the lines $[m, 1, k], [1, n, p]$ in any PK-plane coordinated with the dual local ring of quaternion $\mathbb{Q}(\varepsilon) = \mathbb{Q} + \mathbb{Q}\varepsilon$, where $m, k$ and $p \in \mathbb{Q}(\varepsilon)$, $n \in \mathbb{Q}\varepsilon$. Also some geometric and algebraic properties of the addition has examined.

References

Local Stability Analysis of Strogatz Model with Two Delays
Sertaç Erman and Ali Demir

In this talk, we consider the model of interpersonal interactions with two delays which is a direct extension of Strogatz model. We attempt to show stability regions of the model in various parameter spaces by using D-partition method. The stability of model is investigated for various values of delays. We conclude that delays effect the stability of the model.

References


Sertaç Erman: Kocaeli University, Faculty of Science and Art, Department of Mathematics, Umuttepe, Kocaeli-Turkiye, 106133002@kocaeli.edu.tr
Ali Demir: Kocaeli University, Faculty of Science and Art, Department of Mathematics, Umuttepe, Kocaeli-Turkiye, ademir@kocaeli.edu.tr
135 Weighted Statistical Convergence in Intuitionistic Fuzzy Normed Spaces
Selma Altundağ and Esra Kamber

In this talk, we define the concepts of weighted statistical convergence, \((\mathcal{N}, p_n)\) statistical summability and strong \((\mathcal{N}, p_n)\)-summability in intuitionistic fuzzy normed spaces. We also establish relations between these concepts.

References

[5] H. Fast, Sur la convergence statistique, Colloq. Math. 2 (1951), 241-244,
[14] V. Karakaya, N. Şimşek, M. Ertürk, F. Gürsoy, Lacunary statistical convergence of sequences of functions in intuitionistic fuzzy normed space, Journ. of intelligent and fuzzy systems , 26 (2014), 1289-1299,

Selma Altundag: Sakarya University, Faculty of Science, Department of Mathematics, Sakarya-Turkey, scaylan@sakarya.edu.tr
Esra Kamber: Sakarya University, Faculty of Science, Department of Mathematics, Sakarya-Turkey, esraburdurlu@hotmail.com
Sturm Comparison Theorems for Some Elliptic Type Equations with Damping and External Forcing Terms

Sinem Şahiner, Emine Mısırlı and Aydın Tiryaki

After the Picone’s significant work in 1909, numerous authors extended the Picone type identity for differential equations of various types. In this talk, we will give a Picone-type inequality for a class of some nonlinear elliptic type equations with damping and external forcing terms, and establish Sturmian comparison theorems using the Picone-type inequality.

References


Sinem Şahiner: Izmir University, Faculty of Arts and Sciences, Department of Mathematics and Computer Science, Izmir-Turkiye, sinem.uremen@izmir.edu.tr
Emine Mısırlı: Ege University, Faculty of Science, Department of Mathematics, Izmir-Turkiye, emine.misirli@ege.edu.tr
Aydın Tiryaki: Izmir University, Faculty of Arts and Sciences, Department of Mathematics and Computer Science, Izmir-Turkiye, aydin.tiryaki@izmir.edu.tr
A Note on Solutions of the Nonlinear Fractional Differential Equations via the Extended Trial Equation Method

Meryem Odabasi and Emine Misirli

In this study, we investigate the solutions of nonlinear fractional differential equations that have many advantages in physical sciences and dynamic systems. By using the extended trial equation method we have successfully obtained analytical solutions of some nonlinear fractional differential equations. The results show that extended trial equation method is an effective and powerful mathematical tool for solving nonlinear fractional differential equations arising in mathematical physics.

References

On Quantum Codes Obtained From Cyclic Codes Over 
\( F_2 + uF_2 + u^2F_2 + \cdots + u^mF_2 \)

Abdullah Dertli, Yasemin Cengellenmiş and Şenol Eren

A method to obtain self orthogonal codes over finite fields \( F_2 \) is given and the parameters of quantum codes which are obtained from cyclic codes over \( R = F_2 + uF_2 + u^2F_2 + \cdots + u^mF_2 \) are determined.

References


[8] X. Yin, W. Ma, Gray map and quantum codes over the ring \( F_2 + uF_2 + u^2F_2 \), International Joint Conferences of IEEE Trust Com 11, 2011.


Abdullah Dertli: Ondokuz Mayis University, Faculty of Arts and Sciences, Department of Mathematics , Samsun, Turkey, abdullah.dertli@gmail.com

Yasemin Cengellenmiş: Trakya University, Faculty of Arts and Sciences, Department of Mathematics, Edirne, Turkey, ycengellenmis@yahoo.com

Şenol Eren: Ondokuz Mayis University, Faculty of Arts and Sciences, Department of Mathematics, Samsun, Turkey, seren@omu.edu.tr
On Some Functions Mapping the Zeros of $L_n(x)$ to the Zeros of $L'_n(x)$

Nihal Yılmaz Özgür and Öznur Öztünk

As it is well known, studying zeros of polynomials plays an increasingly important role in Mathematical research. Fibonacci polynomials $F_n(x)$ are defined recursively by

$$F_n(x) = xF_{n-1}(x) + F_{n-2}(x),$$

by initial conditions $F_1(x) = 1$, $F_2(x) = x$. Similarly Lucas polynomials $L_n(x)$ are defined by

$$L_n(x) = xL_{n-1}(x) + L_{n-2}(x),$$

with the initial values $L_1(x) = x$ and $L_2(x) = x^2 + 2$ (see [2]).

In this study, we give some functions which map the modulus of the zeros of Lucas polynomials to the modulus of the zeros of the derivative of Lucas polynomials. Also we examine the roots of first order derivatives of these polynomials.

References


Nihal Yılmaz Özgür: Balıkesir University, Department of Mathematics, 10145 Balıkesir, Türkiye, nihal@balikesir.edu.tr
Öznur Öztünk: Balıkesir University, 10145 Balıkesir, Türkiye, oztunc@balikesir.edu.tr
Both authors are supported by the Scientific Research Projects Unit of Balıkesir University under the project number 2013/02.
140  Finite Blaschke Products and R-Bonacci Polynomials
Nihal Yılmaz Özgür, Öznur Öztünç and Sümeyra Uçar

A Blaschke product of degree $n$ is a function defined by

$$B(z) = \beta \prod_{j=1}^{n-1} \frac{z-a_j}{1-\overline{a_j}z}$$

where $|\beta| = 1$ and $a_j$ are in the unit disc. We know that every Blaschke product $B$, $B(0) = 0$ degree $n$, is associated with a unique Poncelet curve, $B$ identifies the vertices of the $n$—gon.

In this study, we give some examples of Poncelet curves of finite Blaschke products using the zeros of the derivatives of the $r$—Bonacci polynomials. In these cases the Poncelet curves are precisely $n$—ellipses.

References

141  Convergence of Nonlinear Singular Integral Operators to the Borel Differentiable Functions
Harun Karsli and Ismail U.Tiryaki

In this paper convolution type nonlinear singular integral operators of the form

$$T_{\lambda}(f;x) = \int_{a}^{b} K_{\lambda}(t - x, f(t)) \, dt,$$

where $< a, b >$ is an arbitrary interval in $\mathbb{R}$, $\lambda \in \Lambda$, $f \in L_{1} < a, b >$ and $K_{\lambda}$ is a family of kernels satisfying suitable properties. We give some approximation results about the convergence of the operators $T_{\lambda}$ to right, left and symmetric Borel differentiable functions.

We note that our results are an extension of the classical ones, namely, the results dealing with the linear singular integral operators [9] and Poisson integrals [10].

References
142 Regularization of an Abstract Class of Ill-Posed Problems
Djezzar Salah and Benmerai Romaissa

In this talk, we present an abstract class of ill-posed problems described by a differential equation with a self-adjoint unbounded operator coefficient on a Hilbert space. The class under study is regularized using a new modified quasi-boundary value method to obtain an approximate family of well-posed problems. As a result of this regularization, an approximate family of regularized solutions is obtained. Moreover, some results concerning the stability estimates for these regularized solutions as well as some convergences results are provided.

References


Djezzar Salah: University of Constantine 1, Faculty of Exact Sciences, Department of Mathematics, Constantine, Algeria, salah.djezzar@gmail.com

Benmerai Romaissa: University of Constantine 1, Faculty of Exact Sciences, Department of Mathematics, Constantine, Algeria, romaissa.math@gmail.com
Decompositions of Soft Continuity
Ahu Açıkgöz and Nihal Taş

In this talk, we introduce soft $\theta$- open, soft $\theta$- preopen, soft $\theta$- semiopen, soft $\theta$-$\beta$- open and soft $\theta$-$\alpha$- open sets in soft topological spaces and show the relationships between defined new soft sets and other soft sets using diagram. We investigate some properties of these soft sets. Also we define the concepts of $\theta$- pre - soft continuity, $\theta$-$\beta$ - soft continuity, $\theta_{(A,E)}$ - soft continuity, $\theta_{pre}$ - B - soft continuity and $\theta_{\beta}$ - B - soft continuity. Finally, we obtain decompositions of soft continuity.

References

Ahu Açıkgöz: Department of Mathematics, Balıkesir University, 10145 Balıkesir, Turkey, ahuacikgoz@gmail.com
Nihal Taş: Department of Mathematics, Balıkesir University, 10145 Balıkesir, Turkey, nihalarabacioglu@hotmail.com
By X, we will denote an abelian topological Hausdorff group, written additively, which satisfies the first axiom of countability. The double sequence \( \theta = \{(k_r, l_s)\} \) is called **double lacunary** if there exist two increasing of integers such that

\[
k_0 = 0, h_r = k_r - k_{r-1} \to \infty \text{ as } r \to \infty
\]

and

\[
l_0 = 0, \bar{h}_s = l_s - l_{s-1} \to \infty \text{ as } s \to \infty.
\]

Notations: \( k_{r,s} = k_r l_s, h_{r,s} = h_r \bar{h}_s, \theta \) is determine by \( I_r = \{(k) : k_{r-1} < k \leq k_r\}, \ I_s = \{(l) : l_{s-1} < l \leq l_s\}, \ q_r = \frac{k_r}{h_{r-1}}, \bar{q}_s = \frac{l_s}{\bar{h}_{s-1}}, \) and \( q_{r,s} = q_r \bar{q}_s. \) We will denote the set of all double lacunary sequences by \( N_{\theta_{r,s}}. \)

In 2005, R. F. Patterson and E. Savas [1] studied double lacunary statistically convergence by giving the definition for complex sequences as follows:

**Tangent 144.1.** Let \( \theta \) be a double lacunary sequence; the double number sequence \( x \) is \( s_{\theta}^2 \) convergent to \( L \) provided that for every \( \epsilon > 0, \)

\[
P - \lim_{r,s} \frac{1}{h_{r,s}} |\{(k,l) \in I_{r,s} : |x(k,l) - L| \geq \epsilon\}| = 0.
\]

In this case write \( s_{\theta}^2 \) converges \( x = L \) or \( x(k,l) \to L(s_{\theta}^2). \)

In this paper we introduce and study lacunary statistical convergence for double sequences in topological groups and we shall also present some inclusion theorems.

**References**

On Fuzzy Pseudometric Spaces
Elif Aydın and Servet Kütükçü

In this paper, we introduce two classifications in fuzzy pseudometric spaces and examine relationships between them illustrating with examples.

References

[1] A. George, P. Veeramani, On Some Results in Fuzzy Metric Spaces, Fuzzy Sets and Systems, 64(3)(1994), 395 - 399,

Elif Aydın: Ondokuz Mayıs University, Faculty of Arts and Sciences, Department of Mathematics, Kurupelit, Samsun-Turkey, elif_aydin80@hotmail.com
Servet Kütükçü: Ondokuz Mayıs University, Faculty of Arts and Sciences, Department of Mathematics, Kurupelit, Samsun-Turkey, skutukcu@omu.edu.tr
146 On Fixed Points of Extended Hecke Groups

Bilal Demir and Özden Koruoğlu

Hecke groups $H(\lambda_q)$ are Fuchsian groups of the first kind and generated by two linear fractional transformations: $T(z) = -(z)^{-1}$ and $S(z) = -(z + \lambda_q)^{-1}$, where $\lambda_q = 2\cos(\pi/q)$, $q \geq 3$ integer. Then $H(\lambda_q)$ has a presentation:

$$H(\lambda_q) = \langle T, S : T^2 = S^{q} = I \rangle \cong C_2 \ast C_q$$

The extended Hecke groups have been defined in [7], [8] by adding the reflection $R(z) = 1/z$ to the generators of Hecke groups $H(\lambda_q)$.

$$\overline{H}(\lambda_q) = \langle T, S, R : T^2 = S^q = R^2 = I, TR = RT, SR = RS^{q-1} \rangle \cong D_2 \ast C_2 \ast D_q$$

Let $W(z)$ be an arbitrary element of $\overline{H}(\lambda_q)$. The solutions of the equation $W(z) = z$ are called fixed points of the element $W(z)$. Each transformation in $H(\lambda_q)$ has at most two fixed points except for identity. In extended Hecke groups a whole circle can be fixed by a transformation.

In this talk we give some results about fixed points of the elements in extended Hecke groups $\overline{H}(\lambda_q)$.

References


Bilal Demir: Balıkesir University Necatibey Faculty of Education Department of Mathematics Education, Balıkesir-Türkiye, bdemir@balikesir.edu.tr

Özden Koruoğlu: Balıkesir University Necatibey Faculty of Education Department of Primary Mathematics Education, Balıkesir-Türkiye, ozdenk@balikesir.edu.tr

This work was supported by the Commission of Scientific Research Projects of Balıkesir University, Project number 2014/99.
147 New Lagrangian Forms of Modified Emden Equation by Jacobi Method
Gülden Gün Polat and Teoman Özer

The aim of the our work determination of Lagrangians and first integrals of modified Emden equation with respect to the Jacobi method. This novel approach enable to us to obtain Jacobi last multiplier’s by means of known Lie symmetries of governing equation. Ratio of two Jacobi last multiplier corresponds to first integral. Based on this fact we present different first integrals of modified Emden equation. Furthermore some Hamiltonians and explicit solutions are derived.

References

Gülden Gün Polat: Istanbul Technical University, Faculty of Science and Letters, Department of Mathematics, 34469 Maslak, Istanbul-Turkey
Teoman Özer: Istanbul Technical University, Division of Mechanics, Faculty of Civil Engineering, 34469 Maslak, Istanbul-Turkey, tozer@itu.edu.tr
Corresponding author: Teoman Özer.
Fixed Point Theorems for $\psi$-Contractive Mappings on Modular Space

Ekber Girgin and Mahpeyker Öztürk

We introduce $\psi_\rho$-contractive mappings, then we establish fixed point theorem for such mappings on modular spaces. As a consequences of this theorems, we obtain fixed point theorems on modular space with a graph. In addition, we present an example to illustrate the usability of the main results.

References

[13] M. Öztürk, M. Abbas, E. Girgin, *Fixed Points of Mappings Satisfying Contractive Condition of Integral Type in Modular Spaces endowed with a Graph*, Submitted"
149 Convexity and Schur Convexity on New Means
V.Lokesha, U.K.Misra and Sandeep Kumar

In this talk, we discuss some Convexity and Schur harmonic convexity of the Gnan mean, HP-mean and its dual forms are discussed. One can go further investigations on the geometrical aspects of Convexities.

References


V.Lokesha: Department of Mathematics, V. S.K. University, Bellary, India, v.lokesha@gmail.com
U.K.Misra: Department of Mathematics, Berhampur University, Berhampur, Orissa, India
Sandeep Kumar: Department of Mathematics, Acharya Institute of technology, Bangalore, Sandeep@acharya.ac.in
The First author thankful to Authorities of the V. S. K. University, Bellary
On Radial Signed Graphs
Gurunath Rao Vaidya, P.S.K. Reddy and V.Lokesha

In this paper we introduced a new notion radial signed graph of a signed graph and its properties are obtained. Also, we obtained the structural characterization of radial signed graphs. Further, we presented some switching equivalent characterizations.
Delta and Nabla Discrete Fractional Grüss Type Inequality
A. Feza Güvenilir

Properties of the discrete fractional calculus in the sense of a backward and forward difference are introduced and developed. Here, we prove a more general version of the Grüss type inequality for the delta and nabla fractional case. An example of our main result is given.
On Tame Extensions and Residual Transcendental Extensions of a Valuation with $\text{rank}_v = n$

Burcu Öztürk and Figen Öke

Let $(K, v_1)$ be a henselian valued field, $v_i$ be a valuation of residue field $k_{v_i}$, and $v = v_1 \circ v_2 \circ \ldots \circ v_n$ be a composite of valuations $v_1, v_2, \ldots, v_n$ for $i = 2, \ldots, n$. Let $L/K$ be a finite extension, $z_1$ be an extension of $v_1$ to $L$, $z_i$ be an extension of $v_i$ to the residue field $k_{z_i}$, and $z = z_1 \circ z_2 \circ \ldots \circ z_n$ be an extension of $v$ to $L$ which is a composite of valuations $z_1, z_2, \ldots, z_n$ for $i = 2, \ldots, n$.

In this paper it is shown that if $(L, z)/(K, v)$ is a tame extension then $(L, z_1)/(K, v_1))$ and $(k_{z_{i-1}}, z_{i-1})/(k_{v_{i-1}}, v_{i-1}))$ are tame extensions for $i = 2, \ldots, n$.

Also in this paper a residual transcendental extension $w = w_1 \circ w_2 \circ \ldots \circ w_n$ of $v$ to $K(x)$ is studied where $w_1$ is a residual transcendental extension of $v_1$ to the rational function field $K(x)$ defined by minimal pair $(a_1, \delta_1)$ and $w_i$ be a residual transcendental extension of $v_i$ to the residue field $k_{w_{i-1}}$ defined by minimal pair $(a_i, \delta_i)$ for $i = 2, \ldots, n$.

References


Burcu Öztürk: Trakya University, Faculty of Science, Department of Mathematics, Edirne-Turkiye, burcinburcu2002@yahoo.com

Figen Öke: Trakya University, Faculty of Science, Department of Mathematics, Edirne-Turkiye, figenoke@gmail.com
Time Series Forecasting with Grey Modelling
Seval Ene and Nursel Öztürk

Time series is a collection of data points measured over a period of time. Time series forecasting defines the process of predicting future value based on previously observed data by using a mathematical model. Time series forecasting methods have a wide application field as in engineering, social science, economics etc. However in some real world applications, we have limited and uncertain data. Grey models forecast the future values of a time series based on most recent data other than classical forecasting models. Grey system theory was first introduced by Deng (1982). The theory is an interdisciplinary scientific research area. In this paper grey modeling is proposed for forecasting time series characterized as uncertain and small sized. To test the performance of the proposed grey model, data sets from literature are used. Obtained results showed the performance and applicability of the model particularly for forecasting data sets with small size and uncertainty.

References

Seval Ene: Uludag University, Faculty of Engineering, Industrial Engineering Department, Gorukle Campus, 16059, Bursa, Turkey, sevalene@uludag.edu.tr
Nursel Öztürk: Uludag University, Faculty of Engineering, Industrial Engineering, Department, Gorukle Campus, 16059, Bursa, Turkey, nursel@uludag.edu.tr
154 Periodic Solution of Predator-Prey Dynamic Systems with Beddington-DeAngelis Type Functional Response and Impulses
Ayşe Feza Güvenilir, Billur Kaymakçalan and Neslihan Nesliye Pelen

We consider two dimensional predator-prey system with Beddington-DeAngelis type functional response and impulses on Time Scales. For this special case we try to find under which conditions the system has periodic solution. Our study is mainly based on continuation theorem in coincidence degree theory. This study will also give beneficial results for continuous and discrete case.

References

Ayşe Feza Güvenilir: Ankara University, Faculty of Science, Department of Mathematics, Ankara, Turkey, guvenilir@science.ankara.edu.tr, http://math.science.ankara.edu.tr/akademik/afguvenilir.html
Billur Kaymakçalan: Cankaya University, Department of Mathematics and Computer Science, 06810, Ankara, Turkey, billurkaymakcalan@gmail.com, http://mcs.cankaya.edu.tr/billur
Neslihan Nesliye Pelen: Middle East Technical University, Department of Mathematics, Ankara, Turkey, nesliyeykir@gmail.com
Approximation Properties of Kantorovich-Stancu Type Generalization of $q$-Bernstein-Schurer-Chlodowsky Operators on Unbounded Domain
Tuba Vedi and Mehmet Ali Özarslan

In this paper, we introduce the Kantorovich-Stancu type generalization of $q$-Bernstein-Chlodowsky operators on the unbounded domain. We should note that this generalization include various kind of operators which are not introduced earlier. We calculate the error of approximation of these operators by using modulus of continuity and Lipschitz-type functionals. Finally, we give generalization of the operators and investigate its approximations.

References


Tuba Vedi: Eastern Mediterranean University, Gazimagusa, TRNC, Mersin 10, Turkey, tuba.vedi@emu.edu.tr
Mehmet Ali Özarslan: Eastern Mediterranean University, Gazimagusa, TRNC, Mersin 10, Turkey, mehmetali.ozarslan@emu.edu.tr
Use of Golden Section in Music
Sümeyye Bakım

In this study the relationship of Fibocacci Sequence and Golden Ratio with music questioned. Pre acceptances on the studies applied to the chosen examples of some European art music/multi-vocal composers up to now have been discussed within the framework of mathematical and musical.

References
On Analysis of Mathews-Lakshmanan Oscillator Equation via Nonlocal Transformation and Lagrangian-Hamiltonian Description

Özlem Orhan and Teoman Özer

In this study, we consider Mathews-Lakshmanan Oscillator Equation which possesses exact periodic solution, exhibiting the characteristic amplitude-dependent frequency of nonlinear oscillator in spite of the sinusoidal nature of the solution of equation. Mathews-Lakshmanan Oscillator Equation has a natural generalization in three dimensions and these systems can be also quantized exhibiting many interesting features and can be interpreted as an oscillator constrained to move on a three-sphere. Firstly, we examine the first integral in the form $A(t,x)\dot{x} + B(t,x)$ and then, we consider other first integrals of the equation via this finding $\lambda$-symmetry. Using the coefficients of the equation, we characterize this equation that can be linearized by means of nonlocal transformation that is called Sundman transformation. In addition, the time independent integrals for Mathews-Lakshmanan Oscillator Equation are obtained by using modified Prelle-Singer procedure. We demonstrate that the equation is integrable by these first integrals. Further, the Lagrangian- Hamiltonian forms are investigated using this time-independent first integral. Finally, we compare results obtained by two different methods.

References

[10] Ajey K. Tiwari, S. N. PANDEY, M. Senthilvelan and M. Lakshmanan, Classification of Lie point symmetries for quadratic Liénard type equation $x+f(x)x^2+g(x)=0$, Journal of Mathematical Physics, 54 (2013), 053506.
In this paper, we study the singularity theory in pseudo-Galilean space, a special type of Cayley-Klein spaces. In particular, we investigate the singularities of pseudo-Galilean height functions intrinsically related to the Frenet frame along a curve embedded into pseudo-Galilean space. We also establish relationships between singularities of discriminant, bifurcation sets of the function, and geometric invariants under the action of pseudo-Galilean group of curves in pseudo-Galilean space.

References


Tevfik Şahin: Amasya University, Faculty of Sciences and Arts, Department of Mathematics, Amasya-Turkey, tevfik-sah@gmail.com.tr
Murteza Yılmaz: TOBB University of Economics & Technology, murtezay@omu.edu.tr
Existence of Positive Solutions for Second Order Semipositone Boundary Value Problems on the Half-Line

F. Serap Topal and Gülşah Yeni

In this talk, we aim to establish a sufficient condition for the existence of positive solution for semipositone singular Sturm-Liouville boundary value problems on the half-line of an unbounded time scale by using Guo-Krasnosels’kii fixed point theorem.
160 Some Congruent Number Families
Refik Keskin and Ümmügülsüm Öğüt

In this study, we give some congruent number families concerning generalized Lucas sequences ($V_n$).

References


Refik Keskin: Sakarya University, Faculty of Sciences and Arts, Department of Mathematics, Sakarya-Turkiye, rkeskin@sakarya.edu.tr
Ümmügülsüm Öğüt: Sakarya University, Faculty of Sciences and Arts, Department of Mathematics, Sakarya-Turkiye, uogut@sakarya.edu.tr
On Some Fourth-Order Diophantine Equations
Merve Güney Duman and Refik Keskin

Let $k \geq 3$ be an odd integer. In this paper, we show that the equations $x^4 - (k^2 - 4)y^2 = 4(k - 2)$, $x^4 - (k^2 - 4)y^2 = -4(k + 2)$, $x^4 - (k^2 - 4)y^2 = -(k + 2)$ and $x^4 - kx^2y + y^2 = -(k - 2)(k^2 + 4)$ have no positive integer solutions. Moreover, we show that if $k \equiv 1(\text{mod} 8)$, then the equation $x^4 - (k^2 - 4)y^2 = -4(k - 2)$ has no positive integer solutions, if $k \equiv 3(\text{mod} 8)$, then the equation $x^4 - (k^2 - 4)y^2 = 4(k + 2)$ has no positive integer solutions and if $k^2 - 4$ is a squarefree integer, then the equations $x^4 - kx^2y + y^2 = -(k - 2)(k^2 + 4)$ and $x^4 - kx^2y + y^2 = (k + 2)(k^2 - 4)$ have no positive integer solutions. In addition, we define all positive integer solutions of the some fourth-order diophantine equations.

References
[1] LeVeque J. W., Topics in Number Theory, Volume 1 and 2, Dover Publications 2002,
[2] Lucas E., Theorie des Fonctions, Numeriques Simplement Periodiques, American Journal of Mathematics, 1,2, 184-196, 1878,
[16] Keskin R., Generalized Fibonacci and Lucas Numbers of the form $wx^2$ and $wx^2 \pm 1$, Bulletin of the Korean Mathematical Society (accepted),
Characteristic Subspaces of Finite Rank Operators
Mohamed Najib Ellouze

Recently, Uffe Haagerup and Hanne Schultz proved in [1] that for any operator \( T \) in \( \mathcal{M} \), where \( \mathcal{M} \) is a factor of type II\(_1\) such that the spectral measure of Brown is not concentrated in a singleton (cf. [2]), has a non-trivial closed \( T \)-hyperinvariant subspace, constructed by spectral projectors of the limit \( A := \lim_{n \to +\infty} (T^*T)^{\frac{1}{2n}} \) (cf. [3]). In this paper, we prove the existence of this limit for all finite rank operators, and we define the corresponding characteristic subspaces.

References


163  Fixed Point Theory in WC-Banach Algebras
Bilel Mefteh

In this paper, we will prove some fixed point theorems for the sum and the product of nonlinear weakly sequentially continuous operators acting on a WC-Banach algebra. Our results improve and correct some results of the recent paper of Banas and Taoudi [1], and extend some several earlier works using the condition $P''$ where [1] is the following reference:

References

Oscillation and Nonoscillation Criteria for Second Order Generalized Difference Equations
Yaşar Bolat

In this talk, we discuss some new oscillation and nonoscillation criteria for second order nonlinear difference equation with generalized difference operators which generalize and improve some results in the literatures. Also, some examples illustrating the results are included.

References

[1] Y. Bolat and Ö. Akın, Oscillation criteria for higher order half linear delay difference equations involving generalized difference, Mathematica Slovaca, in press.

Kastamonu University, Faculty of Science and Arts, Department of Mathematics, 37100-Kastamonu-Turkey, ybolat@kastamonu.edu.tr
165 On Generalizations of Some Inequalities Containing Diamond-Alpha Integrals and Applications
Billur Kaymakçalan

We present a survey of some generalizations and refinements of the Opial, Hlder, Hardy and Constantin type Inequalities containing the diamond-α dynamic integral, which is defined as a linear combination of the delta and nabla integrals. Some related applications are also given.

Çankaya University, Department of Mathematics and Computer Science, Ankara, Turkey, billur@cankaya.edu.tr
On Reciprocity Law of the $Y(h,k)$ Sums Associated with
PDE’s of the Three-Term Polynomial Relations

Elif Cetin, Yilmaz Simsek and Ismail Naci Cangul

By using PDE’s of the three-term polynomial relations, we find a new finite sum which is related to the Hardy-Berndt sums and the Simsek’s sum $Y(h,k)$. By using PDEs, we give another proof of reciprocity law of this sum. Our method is different from that of Simsek’s (On Analytic properties and character analogs of Hardy Sums, Taiwanese J. Math. 13 (1) (2009), 253-268). We also give some relations and remarks on these sums.

References

Permutation Method for a Class of Singularly Perturbed Discrete Systems with Time-Delay

Tahia Zerizer

Discrete-time systems with state delay have strong background in engineering applications. However, the singularly perturbed discrete system with time-delay has not been fully investigated. In this paper, we develop the perturbation method for a class of linear singularly perturbed discrete systems with time delay. Convergent algorithms are provided showing the steps of the method.
The purpose of this work is the construction of minimal and maximal solutions for a class of second order quasilinear elliptic equation subject to nonlocal boundary conditions. More specifically, we consider the following nonlinear boundary value problem

\[
\begin{aligned}
- (\varphi_p (u^\Delta))^\Delta &= f(x,u), \text{ in } (a, b)_T, \\
u(a) - a_0 u^\Delta(a) &= g_0(u), \\
u(\sigma(b)) + a_1 u^\Delta(\sigma(b)) &= g_1(u),
\end{aligned}
\]

where \( p > 1 \), \( \varphi_p (y) = |y|^{p-2} y \), \( (\varphi_p (u^\Delta))^\Delta \) is the one-dimensional \( p \)-Laplacian, \( f : [a, b]_T \times \mathbb{R} \to \mathbb{R} \) is a rd-continuous function, \( g_i : C_{rd} ([a, b]_T) \times C_{rd} ([a, b]_T) \to \mathbb{R} \) (\( i = 0 \) and 1) are rd-continuous and \( a_0 \) and \( a_1 \) are a positive real numbers.

Mohammed Derhab: Department of Mathematics, Faculty of Sciences, University Abou-Bekr Belkaid Tlemcen, B.P.119, Tlemcen, 13000, Algeria, derhab@yahoo.fr

Mohammed Nehari: Department of Mathematics, Faculty of Sciences, University Ibn Khaldoun Tiaret, Algeria, nehari72@yahoo.fr
169  Application of Filled Function Method in Chemical Control of Pests
Ahmet Şahiner, Meryem Öztop, Gülden Kapusuz and Ozan Demirözer

Rhodococcus perornatus (Cockerell & Parrott) is an important pest on oil-bearing rose (Rosa damascena Mill.) and the methidation has been used for a long time in order to control of the pest. As usual determining the effects of plant protection products on the organism is very important in pest management practices. In this study, the effect of the Methidathion E.C. 426 g/l on R. perornatus is modeled by using fuzzy logic approach. To obtain the maximum effect on the pest, how long the pesticide should be applied is determined by using the Filled Function Method.

References
A New Approach to the Filled Function Method for Non-smooth Problems
Nurullah Yilmaz and Ahmet Sahiner

The filled function method (FFM) is one of the effective methods for smooth problems. Recently, studies on FFM have been concentrated on non-smooth problems. In this study, we present a new algorithm which holds some properties of the FFM, to find the global minimizer of the non-smooth but continuous functions.

References

171 Determining of the Achievement of Students by Using Classical and Modern Optimization Techniques
Ahmet Şahiner and Raziye Akbay

The purpose of this study is to investigate effects of sleeping hours and study time to students’ achievement and find out in which case minimum and maximum achievement level occurs by using global optimization methods.

References

Fuzzy Logic Approach to an UH-1 Helicopter Fuel Consumption and Calculation of Power Problem
Ahmet Şahiner and Reyhane Ercan

The fuel consumption of UH-1 Helicopter is related with air temperature, altitude, speed and weight. Before the flight, pilots spend many times to calculate estimated fuel consumption. Aim of this work is shorten the time of pilots spend for calculation and find the fuel consumption which can be minimum in which conditions by using fuzzy logic in filled function.

References

Ahmet Şahiner: Suleyman Demirel University, Faculty Art and Science of Science, Department of Mathematics, Isparta, Türkiye, ahmetsahiner@sdu.edu.tr
Reyhane Ercan: Suleyman Demirel University, Faculty of Art and Science, Department of Mathematics, Isparta, Türkiye, reyhaneercan8288@gmail.com
Determination of Effects of Brassinosteroid Applications on Secondary Metabolite Accumulation in Salt Stressed Peppermint (Mentha piperita L.) by Modern Optimization Techniques
Ahmet Sahiner, Tuba Yigit, Ozkan Coban and Nilgun Gokturk Baydar

Some classical methods remain incapable for the modeling of complex systems. Application of these methods can be costly and time consuming to regulate the data due to the excess of variable especially, in other disciplines such as medicine, agriculture, biology, econometrics. The fuzzy logic approach is a useful mathematical tool to eliminate these troubles. By using this method the new data is obtained for unstressed conditions under the NaCl stress and comments. In this study, the effect of different levels (0, 0.5, 1.5 and 2.5 mg/l) of 24 epibrassinolidone, an active form of brassinosteroid, on the accumulation of essential oil yield and total phenolic content in peppermint (Mentha piperita L.) plants grown in the media containing 0, 100 and 150 mM NaCl was modelled by the fuzzy logic approach.

References
174  On a Completeness Property of $C(X)$ Equipped with a Set-Open Topology
Smail Kelaiaia

Let $C(X)$ be the set of all real-valued continuous functions on a topological space $X$. We give, in the framework of a particular set-open topology defined on $C(X)$ and by using a topological game, some conditions for $C(X)$ to be weakly $\alpha$-favorable. This generalize some results obtained by R.A McCoy and I. Ntantu for the compact-open topology.
Existence of Solutions of a Class of Second Order Differential Inclusions

D. Azzam-Laouir and F. Aliouane

In the present paper we prove, in a separable Banach space, the existence of solutions for the second order sweeping process of the form

$$-\dot{x} \in N_{K(t)}(x(t)) + F(t, x(t), \dot{x}(t)), \ a.e. \ t \in [0, T],$$

where $F$ is an upper semicontinuous set-valued mapping with nonempty closed convex values, $K$ a nonempty ball compact and $r$–prox-regular $E$–set-valued mapping and $N_{K(t)}(.)$ the proximal normal cone of $K(t)$.

References


Applications of Generalized Fibonacci Autocorrelation Sequences \( \{ \Gamma_{k,n}(\tau) \}_{\tau}^{\infty} \)

Sibel Koparal and Neşe Ümür

In this study, we give the elements of the generalized Fibonacci Autocorrelation sequences \( \{ \Gamma_{k,n}(\tau) \}_{\tau}^{\infty} \) defined as

\[
\Gamma_{k,n}(\tau) \overset{df}{=} \Gamma_{n}(U_{ki},\tau).
\]

and some interesting sums involving the numbers \( \Gamma_{k,n}(\tau) \), where odd integer number \( k \) and nonnegative integers \( \tau, n \). For example, we show that

\[
\sum_{\tau=0}^{n} \Gamma_{k,n}(\tau) = \left[ \frac{U_{k(n+1)} + U_{kn} - U_k}{V_k} \right]^2,
\]

\[
V_k \sum_{\tau=0}^{n} (-1)^\tau \Gamma_{k,n}(\tau) = \begin{cases} 
\frac{(U_{k(n+1)} - U_{kn} + U_k)^2}{V_k} & \text{if } n \text{ is odd} \\
U_{k(n+1)}U_{kn} & \text{if } n \text{ is even.}
\end{cases}
\]

References


The Computer Simulation of Nuclear Magnetic Resonance Hyperfine Structure Constant for $AB_2$, $A_2B_2$ and $A_2B_3$ Systems Containing Some Organic Molecules with Spin $\frac{1}{2}$ Using Jacobi Programme

Hüseyin Ovalıoğlu, Adnan Kılıç and Handan Engin Kırımlı

The energy matrices of molecules of $AB_2$, $A_2B_2$ and $A_2B_3$ type have been calculated for three different chemical shifts and several indirect spin-spin coupling coefficients ($J_{ij}$) to obtain Nuclear Magnetic Resonance (NMR) hyperfine structure of such systems. The JACOBI programme were used to calculate eigenvalues and eigenvectors of these systems. We have developed a programme to calculate the transition probabilities and the transition energies. It is observed that the theoretically calculated spectra is in agreement with the experimental spectra.

**Keyword:** Nuclear Magnetic Resonance (NMR)

References


Hüseyin Ovalıoğlu: Uludağ University, Faculty of Science, Department of Physics, Görükle, Bursa-Türkiye, ovali@uludag.edu.tr
Adnan Kılıç: Uludağ University, Faculty of Science, Department of Physics, Görükle, Bursa-Türkiye, adnank@uludag.edu.tr
Handan Engin Kırımlı: Uludağ University, Faculty of Science, DЕpartment of Physics, Görükle, Bursa-Türkiye, hengin@uludag.edu.tr

This work was supported by the Commission of Scientific Research Projects of Uludag University, Project number OUAP(F)-2012/30.
The Computer Simulation of Nuclear Magnetic Resonance Hyperfine Structure Constant for ANX, ABC and $A_3BC$ Systems Containing Some Organic Molecules with Spin $\frac{1}{2}$ Using Jacobi Programme

Hüseyin Ovalıoğlu, Handan E. Kırımlı, Cengiz Akay and Adnan Kılıç

The energy matrices of molecules of ANX, ABC and $A_3BC$ type have been calculated values of four different chemical shifts and several indirect spin-spin coupling coefficients ($J_{ij}$) to obtain Nuclear Magnetic Resonance (NMR) hyperfine structure of such systems. The JACOBI programme were used to calculate eigenvalues and eigenvectors of these systems. We have developed a programme to calculate the transition probabilities and the transition energies. Also, it has been observed that the theoretically calculated spectra is in agreement with the experimental spectra for molecule of ANX.

Keyword: Nuclear Magnetic Resonance (NMR)

References


Hüseyin Ovalıoğlu: Uludağ University, Faculty of Science, Department of Physics, Görükle, Bursa-Türkiye, ovali@uludag.edu.tr
Handan Engin Kırımlı: Uludağ University, Faculty of Science, Department of Physics, Görükle, Bursa-Türkiye, hengin@uludag.edu.tr
Cengiz Akay: Uludağ University, Faculty of Science, Department of Physics, Görükle, Bursa-Türkiye, cenay@uludag.edu.tr
Adnan Kılıç: Uludağ University, Faculty of Science, Department of Physics, Görükle, Bursa-Türkiye, adnank@uludag.edu.tr

This work was supported by the Commission of Scientific Research Projects of Uludag University, Project number OUAP(F)-2012/13.
Necessary and Sufficient Conditions for First Order Differential Operators to be Associated with a Disturbed Dirac Operator in Quaternionic Analysis

Uğur Yüksel

Recently the initial value problem
\[
\frac{\partial}{\partial t} u = L u := 3 \sum_{i=1}^{3} A^{(i)}(t, x) \partial_{x_i} u + B(t, x) u + C(t, x)
\]
\[u(0, x) = u_0(x)\]
has been solved uniquely by N. Q. Hung [1] using the method of associated spaces constructed by W. Tutschke [2] in the space of generalized regular functions in the sense of quaternionic analysis satisfying the equation
\[D_{\alpha} u := Du + \alpha u = 0, \quad \alpha \in \mathbb{R}\]
where \(D = \sum_{j=1}^{3} e_j \partial_{x_j}\) is the Dirac operator, and \(t\) is the time variable. Only sufficient conditions has been obtained in [1] for the operators \(L\) and \(D_{\alpha}\) to be associated.

In the present talk we will prove necessary and sufficient conditions for the underlined operators to be associated. This criterion makes it possible to construct all linear operators \(L\) for which the initial value problem with an arbitrary initial generalized regular function is always solvable. Further we will correct a mistake made in the calculation of the interior estimate in [1].

References


Theoretical Investigation of Substituent Effect on the Carbonyl Stretching Vibration

Ilhan Küçük and Aslı Ayten Kaya

Gaussian 03 is the electronic structure program, is used by chemists, chemical engineers, biochemists, physicists and others for research in established and emerging areas of chemical interest. Starting from the basic laws of quantum mechanics, Gaussian predicts the energies, molecular structures, and vibrational frequencies of molecular systems, along with numerous molecular properties derived from these basic computation types. In this study, the molecular geometry and vibrational frequencies of substitute isonitrosoacetophenone (inapH) molecules in the ground state have been calculated using density functional method (B3LYP) with the 6−311 + +G(d,p) basis set. The values calculated by the Gaussian 03 program were used to the artificial neural network. The developed neural network, which has four input neurons, one output neuron, four hidden layers, five, six, seven and eight neurons of hidden layers and full connectivity between neurons. The input parameters were electronegativity, dipole moment, C and O Mulliken charges. A total of 240 input vectors obtained from varied samples were available in the training data. The results show that the ANN model has a 99% correlation with Gaussian program data. All statistical values prove that the proposed ANN model is suitable to predict the vibration frequency values very close to the results of the calculated values.

Ilhan Küçük: Uludag University, Faculty of Science, Department of Chemistry, Görükle, Bursa-Turkiye, kucuk@g-mail.com
Aslı Ayten Kaya: Uludag University, Faculty of Science, Department of Physics, Görükle, Bursa-Turkiye, aslitay@ulu-dag.edu.tr
181 Modeling of the Optical Properties of the CdS Thin Films by Using Artificial Neural Network

Aslı Ayten Kaya, Kadir Ertürk, Nil Küçük and Ilker Küçük

In this study, CdS thin films were produced by electro-deposition method. Optical properties of thin films were investigated UV-Vis Spectrophotometer. A new model was developed with experimental data using by Artificial Neural Network (ANN). This model has three hidden layers with twenty-one neurons and full connectivity between them. The input parameters were sample number (n), absorbance (A), thickness (d) and absorbance constant (α). A total of 2400 input vectors were available in the training and testing data. The number of hidden layers and neurons in each layer were determined through trial and error to be optimal including different transfer functions such as hyperbolic tangent, sigmoid and hybrid. After the network was trained, a better result was obtained from the network formed by the hyperbolic tangent transfer function in the hidden and output layers. The number of epochs was $10^6$ for training.

Aslı Ayten Kaya: Uludag University, Faculty of Science, Department of Physics, Görükle, Bursa-Turkiye, aslitay@uludag.edu.tr
Kadir Ertürk: Namik Kemal University, Faculty of Science, Department of Physics, Merkez, Tekirdag-Turkiye, ker-turk@nku.edu.tr
Nil Küçük: Uludag University, Faculty of Science, Department of Physics, Görükle, Bursa-Turkiye, nilkoc@uludag.edu.tr
Ilker Küçük: Uludag University, Faculty of Science, Department of Physics, Görükle, Bursa-Turkiye, ikucuk@ulu-dag.edu.tr

This work was supported by the Commission of Scientific Research Projects of Uludag University, Project number OUAP(F)-2013/14.
Nonprinciple Solutions and Extensions of Wong’s Oscillation Criteria to Forced Second-Order Impulsive and Delay Differential Equations
Abdullah Üzbekler and Ağacık Zafer

Wong’s well-known oscillation theorem states that if \( z \) is a positive nonprincipal solution of
\[
(r(t)x')' + q(t)x = 0, \quad t \geq a
\]
satisfying
\[
\lim_{t \to \infty} H(t) = -\lim_{t \to \infty} H(t) = \infty,
\]
where
\[
H(t) := \int_{a}^{t} \frac{1}{r(s)z^2(s)} \left( \int_{a}^{s} z(\sigma)f(\sigma)d\sigma \right)ds,
\]
then every solution of
\[
(r(t)x')' + q(t)x = f(t)
\]
is oscillatory.

In this talk, we give some extensions of above result to impulsive and delay differential equations. It is shown that the oscillation behavior may be altered due to presence of the delay and impulse action. Extensions to Emden-Fowler type impulsive and delay equations are also provided.

References
Modeling of Exposure Buildup Factors for Concrete Shielding Materials up to 10 mfp Using Generalized Feed-Forward Neural Network
Nil Kucuk, Vishwanath P. Singh and N. M. Badiger

In this work, generalized feed-forward neural network (GFFN) was presented for the computation of the gamma-ray exposure buildup factors ($B_D$) of the seven concrete shielding materials [ordinary (OR), hematite-serpentine (HS), ilmenite-limonite (IL), basalt-magnetite (BM), ilmenite (IT), steel-scrap (SS), steel-magnetite (SM)] in the energy region 0.03-15 MeV, and for penetration depths up to 10 mean free path (mfp). The GFFN has been trained by a Levenberg-Marquardt learning algorithm. The developed model is in 99% agreement with the ANSI/ANS-6.4.3 standard data set. Furthermore, the model is fast and does not require tremendous computational efforts. The estimated $B_D$ data for concrete shielding materials have been given with penetration depth and incident photon energy as comparative to the results of the interpolation method using the Geometrical Progression (G-P) fitting formula.
Calculation of Gamma-Ray Exposure Buildup Factors for Some Biological Samples
Nil Kucuk, Vishwanath P. Singh and N. M. Badiger

Gamma-ray exposure buildup factors (EBF) have been calculated for some biological samples (viz. lungs, pancreas, and ovaries) in the energy region 0.015–15 MeV, up to penetration depths of 40 mean free paths (mfp). The five-parameter geometric progression (G-P) fitting approximation and ANSI/ANS-6.4.3-1991 (American National Standard) library have been used to calculate EBF. The EBF have been studied as functions of incident photon energy and penetration depth. The variations in the EBF, for all the biological samples, in different energy regions, have been presented in the form of graphs. Buildup factors of these biological samples cannot be found in any standard database, so these studies will help in estimating safe dose levels for radiotherapy patients.

Nil Kucuk: Uludag University, Faculty of Art and Sciences, Department of Physics, Gorukle Campus, 16059 Bursa, Turkey, nilkoc@uludag.edu.tr
Vishwanath P. Singh: Karnatak University, Department of Physics, Dharwad, 580003, India and Health Physics Section, Kaiga Atomic Power Station-3&4, NPCIL, Karwar 581400, India, kudphyvp@rediffmail.com
N. M. Badiger: Karnatak University, Department of Physics, Dharwad, 580003, India, nagappa123@yahoo.com
185 Determination of Thermoluminescence Kinetic Parameters of ZnB$_2$O$_4$: La Phosphors

Nil Kucuk, A.Halit Gozel, Mustafa Topaksu and Mehmet Yüksel

Thermoluminescence (TL) glow curves of 1%, 2%, 3% and 4% ZnB$_2$O$_4$: La phosphors synthesized by nitric acid method were obtained by irradiation at the dose range of 143 mGy - 60 Gy with $^{90}$Sr/$^{90}$Y beta source, which has 40 mCi activity, included in the Risø TL/OSL DA-20 reader system. TL glow curves were recorded after pre-heating process at 140 °C and then heating up to 450 °C in nitrogen atmosphere at a constant heating rate of 5 °C/s. In this study, with the help of glow curve readings, kinetic parameters of the main TL glow peaks of ZnB$_2$O$_4$: La phosphors (i.e. activation energies and frequency factors) were determined and evaluated by the method of Computerized Glow Curve Deconvolution (CGCD), Peak Shape (PS) method and Initial Rise (IR) method. In conclusion, kinetic parameters found in this study by the methods applied to ZnB$_2$O$_4$: La phosphors were consistent with each other.
Improved Numerical Radius and Spectral Radius Inequalities for Operators
Fuad Kittaneh and Amer Abu-Omar

We establish an improvement of the triangle inequality for the numerical radius and give necessary and sufficient conditions for the equality case. New numerical radius and spectral radius inequalities are also given. Our results include an improvement of a well-known spectral radius inequality concerning the subadditivity property for commuting operators.
n-Dimensional Sobolev type spaces involving Chebli-Trimeche Transform

Mourad Jelassi

Using Chébli Trimèche transform, we define and study n-Dimensional Sobolev type spaces. In particular, we give some properties including completeness and boundedness of convolution product in these spaces. Next, a Titchmarsh type theorem for the Chébli Trimèche transform is investigate.
A Fixed Point Theorem for Multivalued Mappings with $\delta$-Distance on Complete Metric Space

Özlem Acar and Ishak Altun

In this talk, we mainly study on fixed point theorem for multivalued mappings with $\delta$-distance using Wardowski’s technique on complete metric space. Let $(X,d)$ be a metric space and $B(X)$ be family of all nonempty bounded subsets of $X$. Define $\delta : B(X) \times B(X) \rightarrow \mathbb{R}$ by

$$\delta(A,B) = \sup \{d(a,b) : a \in A, b \in B\}.$$ 

Considering $\delta$-distance, it is proved that if $(X,d)$ be a complete metric space and $T : X \rightarrow B(X)$ be a multivalued certain contraction, then $T$ has a fixed point.

References

189 Existence of Solutions of $\alpha \in (2, 3]$ Order Fractional Three Point Boundary Value Problems with Integral Conditions
Sinem Unul and N.I. Mahmudov

In this talk, existence of solutions for $\alpha \in (2, 3]$ order fractional differential equations with three point fractional boundary and integral conditions will be discussed:

$$D_0^\alpha u(t) = f \left( t, u(t), D_0^{\beta_1} u(t), D_0^{\beta_2} u(t) \right), \quad 0 \leq t \leq T; \quad 2 < \alpha \leq 3$$

with the two point and integral boundary conditions

$$a_0 u(0) + b_0 u(T) = \lambda_0 \int_0^T g_0(s, u(s)) \, ds,$$

$$a_1 D_0^{\beta_1} u(\eta) + b_1 D_0^{\beta_1} u(T) = \lambda_1 \int_0^T g_1(s, u(s)) \, ds, \quad 0 < \beta_1 \leq 1, \quad 0 < \eta < T,$$

$$a_2 D_0^{\beta_2} u(\eta) + b_2 D_0^{\beta_2} u(T) = \lambda_2 \int_0^T g_2(s, u(s)) \, ds, \quad 1 < \beta_2 \leq 2,$$

where $D_0^\alpha$ denotes the Caputo fractional derivative of order $\alpha$.

References


190 Vector-Valued Variable Exponent Amalgam Spaces

Ismail Aydin

In this talk, we define the vector-valued (Banach space valued) variable exponent amalgam spaces and discuss the basic properties, the dual space, the reflexivity and some embedding properties of these spaces.

References


191 Soliton Solutions of Sawada–Kotera Equation by Hirota Method
Esra Karataş and Mustafa Inc

In this work the Sawada–Kotera equation is studied. The Hirota Bilinear Method is used to determine multiple-soliton solutions for this equation. By means of this method, three soliton solutions for fifth order nonlinear partial differential equation is formally obtained.

Eser Karataş: Çanakkale Onsekiz Mart University, Gelibolu Piri Reis Vocational School, Department of, Mathematics, Çanakkale-Türkiye, esrakaratasa@gmail.com
Mustafa Inc: Firat University, Science Education, Department of Mathematics, Elazığ-Türkiye, minc@firat.edu.tr
This work was supported by Çanakkale Onsekiz Mart University
192 Certain Quasi-Cyclic Codes which are Hadamard Codes
Mustafa Özkan and Figen Öke

A $n \times n$ matrix such that all components are $-1$ or $1$ and $M.M^t = n.I$ is called Hadamard matrix. A code obtained by using a Hadamard matrix is called Hadamard code. In this study it is shown that Hadamard codes which have codewords in the ring $F_2 + vF_2$ can be obtained by some special matrices lexicographically ordered. This relation is obtained by using two different Gray maps from $(F_2 + vF_2)^n$ to $F_2^{2n}$.

References

193  **Pointwise Convergence of Derivatives of New Baskakov-Durrmeyer-Kantorovich Type Operators**

Gulsum Ulusoy, Ali Aral and Emre Deniz

Recently in [1], we have constructed a new sequence of integral type operators which contain characteristic properties of Baskakov Durrmeyer and Baskakov Kantorovich operators. In this talk, we continue focus on pointwise convergence of derivatives of these operators by the means of Voronoskaya type asymptotic formula. Moreover, to describe the rate of convergence and an estimate of error in terms of modulus of continuity in simultaneous approximation (approximation of derivatives of functions by the corresponding order derivatives of operators) by this new durrmeyer operators, we present Voronovskaya type asymptotic formula in quantitative form.

**References**


Gülsüm Ulusoy: Kirikkale University, Faculty of Science and Arts, Department of Mathematics, Yahşihan, 71450, Kirikkale-Turkey, ulusoygulsum@hotmail.com
Ali Aral: Kirikkale University, Faculty of Science and Arts, Department of Mathematics, Yahşihan, 71450, Kirikkale-Turkey, aliaral73@yahoo.com
Emre Deniz: Kirikkale University, Faculty of Science and Arts, Department of Mathematics, Yahşihan, 71450, Kirikkale-Turkey, emredeniz@hotmail.com
On the High Order Lipschitz Stability of Inverse Nodal Problem for String Equation
Emrah Yılmaz and Hikmet Koyunbakan

Inverse nodal problem on the string operator is the finding the density function using nodal sequence \( \{ z_{k}^{(n)} \} \). In this paper, we solve a stability problem using nodal set of eigenfunctions and show that the space of high order density functions is homeomorphic to the partition set of the space of quasinodal sequences. Basically, this method is similar to [1] and [2] which is given for Sturm-Liouville and Hill operators, respectively.

References

195 Positive Solutions of a Boundary Value Problem with Derivatives in the Nonlinear Term
Patricia J.Y. Wong

We consider the Sturm-Liouville boundary value problem

\[
\begin{aligned}
&y^{(m)}(t) + F(t, y(t), y'(t), \ldots, y^{(q)}(t)) = 0, \quad t \in [0, 1] \\
y^{(k)}(0) = 0, \quad 0 \leq k \leq m - 3 \\
\zeta y^{(m-2)}(0) - \theta y^{(m-1)}(0) = 0, \quad \rho y^{(m-2)}(1) + \delta y^{(m-1)}(1) = 0
\end{aligned}
\]

where \( m \geq 3, 1 \leq q \leq m - 2, \lambda > 0 \) and \( F \) is continuous at least in the domain of interest. It is noted that boundary value problems with derivative-dependent nonlinear terms are seldom investigated in the literature due to technical difficulty. In this talk, we employ a new technique to establish existence of positive solutions of the boundary value problem.
One Step Iteration Scheme for Two Multivalued Mappings in CAT(0) Spaces

Izhar Uddin and M. Imdad

197 A Variant Akaike Information Criterion for Mixture Autoregressive Model Selection

Fayçal Hamdi

In this talk, we consider the problem of order selection of Mixture Autoregressive (MAR) models. These models are among the most powerful tools for modelling some stylized features exhibited by many time series such as multimodality, tail heaviness, change in regime and asymmetry. We aim to present a variant of the Akaike information criterion (AIC), for MAR model selection, based on complete-data rather than incomplete-data and which different from the standard criteria. We compare the performance of our proposed criterion to that of the traditional AIC criterion and certain other competitors in a simulation study.

References

198 Zagreb Polynomials of Three graph Operators
A.R.Bindusree, V.Lokesha, I.Naci Cangul and P.S.Ranjini

A topological index is a graph invariant applicable in chemistry. The first and second Zagreb indices are amongst the oldest and best known topological indices defined in 1972 by Gutman and are given different names in the literature, such as the Zagreb group indices, the Zagreb group parameters and most often, the Zagreb indices. Zagreb indices were among the first indices introduced and has been used to study molecular complexity, chirality, ZE-isomerism and hetero-systems. Zagreb indices exhibited a potential applicability for deriving multi-linear regression models. Let $G$ be a connected graph with $n$ vertices and $m$ edges. The vertex set and edge set are denoted by $V(G)$ and $E(G)$ respectively. For every vertex $v_i \in V(G)$, where $i = 1, 2, \ldots, n$, the edge connecting $v_i$ and $v_j$ is denoted by $(v_i, v_j)$ and $d(v_i)$ denotes the degree of vertex $v_i$ in $G$. The first and second zagreb indices are defined as follows.

$$M_1(G) = \sum_{v_i \in V(G)} [d(v_i)]^2$$

$$M_2(G) = \sum_{(v_i, v_j) \in E(G)} [d(v_i) d(v_j)].$$

First and Second zagreb polynomials are derived from First and Second Zagreb indices respectively. They are defined as follows.

$$M_1(G, x) = \sum_{v_i, v_j \in E(G)} x^{d(v_i) + d(v_j)}$$

$$M_2(G, x) = \sum_{v_i, v_j \in E(G)} x^{d(v_i) d(v_j)}$$

where $x$ is a dummy variable. Moreover, the First and Second zagreb indices can be obtained from its polynomial. Because for $i = 1, 2$

$$M_i(G) = \frac{\partial M_i(G, x)}{\partial x}$$

The third Zagreb index, $M_3(G)$ and third zagreb polynomial $M_3(G, x)$ are defined respectively as,

$$M_3(G) = \sum_{(v_i, v_j) \in E(G)} |d(v_i) - d(v_j)|.$$

$$M_3(G, x) = \sum_{(v_i, v_j) \in E(G)} x^{d(v_i) - d(v_j)}.$$

In this paper, the relation between Zagreb polynomials on three graph operators is discussed. We investigates the relation between Zagreb polynomial of a graph $G$ and a graph obtained by applying the operators $S(G), R(G)$ and $Q(G)$. Moreover, relation between Zagreb polynomial of a graph $G$ and its corona is also described.

References


A.R.Bindusree: Sree Narayana Gurukulam College of Engineering
V.Lokesha: Department of Mathematics, Vijayanagara Sri Krishnadevaraya University, Bellary, India, v.lokesha@gmail.com
Ismail Naci Cangül: Uludag University, Faculty of Science, Department of Mathematics, Bursa-Turkiye, cangul@ulu-dag.edu.tr
Ranjini P.S: Department of Mathematics, Don Bosco Institute Of Technology, Bangalore-74, India, ranjini.p.s@yahoo.com
A Note on the Moment Estimate for Stochastic Functional Differential Equations
Young-Ho Kim

In this talk, we consider a stochastic functional differential equation with initial value under non-Lipschitz condition and a weakened linear growth condition. By applying the Itô formula, a class of moment estimates of the solution of stochastic differential equations is studied.

References


Department of Mathematics Changwon National University, Changwon, 641-773, Korea yhkim@changwon.ac.kr
In this talk, we discuss optimization of computational aspects in public administration with example of Kyrgyzstan. Our work analyzes the inefficiencies in public administration in Kyrgyzstan and uses mathematical models to provide, in our opinion, decision-making insight on how to reduce or completely eliminate effect of these inefficiencies. We will conclude with common challenges encountered by our researchers in application of these mathematical techniques.

References

[1] Public Foundation Media Consulting Foundation, Analytical report on the research results of the level of access to information and discussion of problems on the possible solutions in local communities. This research produced with support of the German Federal Ministry of Economic Cooperation and Development. (2014)


201  Jacobi Orthogonal Approximation with Negative Integer and its Application

Zhang Xiao-yong and Wan Zheng-su

In this paper, the Jacobi spectral method for ordinary differential equation is proposed, which is based on the Jacobi approximation with negative integer. This method is very efficient for the initial value problem of the ordinary differential equations. The global convergence of proposed algorithm is proved. Numerical results demonstrate the spectral accuracy of this new approach and coincide well with theoretical analysis.

References

Existence Results for Nonlinear Impulsive Fractional Differential Equations with $p-$Laplacian Operator
Ilkay Yaslan Karaca and Fatma Tokmak

This paper is concerned with the existence of solutions for a nonlinear boundary value problem of impulsive fractional differential equations with $p$-Laplacian operator. By applying some standard fixed point theorems, obtain sufficient conditions for the existence of solutions of the problem at hand. Examples are presented to demonstrate the applicability of our results.

References

A Relation Between the Lefschetz Fixed Point Theorem and the Nielsen Fixed Point Theorem in Digital Images

Ismet Karaca

We present the Nielsen fixed point theorem for digital images. We deal with some important properties of the Nielsen number and calculate the Nielsen number for some digital images. Finally, we give a relation between the Lefschetz fixed point theorem and the Nielsen fixed point theorem in digital images.

References

Second Order Nonlinear Boundary Value Problems with Integral Boundary Conditions on Time Scales
F. Serap Topal and Arzu Denk Oguz

This study investigates the existence of symmetric positive solutions for a class of nonlinear boundary value problem of second order dynamic equations with integral boundary conditions on time scales. Under suitable conditions, the existence of symmetric positive solutions are established by using monotone iterative technique. An example is presented to demonstrate the application of our main result.

References


205 Existence of a Solution of Integral Equations via Fixed Point Theorem
Selma Gülyaz

In this talk, we establish a solution to the following integral equation

\[ u(t) = \int_0^T G(t,s)f(s,u(s)) \, ds, \quad \text{for all } t \in [0,T], \]

where \( T > 0, f : [0,T] \times \mathbb{R} \to \mathbb{R} \) and \( G : [0,T] \times [0,T] \to [0,\infty) \) are continuous functions. For this purpose, we also obtain some auxiliary fixed point results which generalize, improve and unify some fixed point theorems in the literature.

References

Triangular and Square Triangular Numbers

Arzu Özkoç

In this work, we obtain some algebraic identities on triangular numbers denoted by $T_n$ and square triangular numbers denoted by $S_n$. And also we construct a connection between triangular and square triangular numbers. We determine when the equality $T_m = S_n$ holds by using $s_n$ and $t_n$ denote the sides of the corresponding square and triangle respectively. We derive some formulas on perfect squares, divisibility properties, sums of $s_n, t_n, S_n, T_n$ and Pythagorean triples.

References


207 Approximation Methods on a Complete Geodesic Space
Yasunori Kimura

In this talk, we propose iterative methods to approximate a common fixed point of mappings defined on a complete geodesic space with curvature bounded above. We also consider calculation error when generating an iterative sequence and we observe its convergence property.

References


Fixed Point Results for $\alpha$-Admissible Multivalued $F$–Contractions
Gonca Durmaz and Ishak Altun

In this study, we give some fixed point results for multivalued mappings using Pompeiu-Hausdorff distance on complete metric space. For this, we consider the $\alpha$-admissibility of multivalued mappings. Our results are real generalizations of Mizoguchi-Takahashi fixed point theorem. We also provide an example showing this fact.

References

[10] B. Samet, C. Vetro and P. Vetro, Fixed point theorems for $\alpha$-$\psi$-contractive type mappings, Nonlinear Analysis 75 (2012), 2154-2165.

Gonca Durmaz: Department of Mathematics, Faculty of Science and Arts, Kirikkale University, 71450 Yahsihan, Kirikkale, Turkey, gncmatematik@hotmail.com
Ishak Altun: Department of Mathematics, Faculty of Science and Arts, Kirikkale University, 71450 Yahsihan, Kirikkale, Turkey, ishakaltun@yahoo.com
209 Advances on Fixed Point Theory
Erdal Karapınar

In this talk, we discuss on the advances on metric fixed point theory and some other abstract spaces via the recent publications on the topics. In particular, we point out the extension and improvement in various abstract spaces, such as generalized metric space.

References

Atilim University, Department of Mathematics, Incek, Ankara Turkey ekarapinar@atilim.edu.tr, erdalkarapinar@yahoo.com
210 Fixed Point Theorems for a Class of $\alpha$-Admissible Contractions and Applications to Boundary Value Problem

Inci M. Erhan

In this talk, we introduce a class of $\alpha$-admissible contraction mappings defined via altering distance functions and acting on complete metric spaces. We investigate conditions for the existence and uniqueness of fixed points for these contractions and discuss the results in partially ordered spaces. As an application, we consider boundary value problems for a first order differential equations with periodic boundary conditions.

References


211 Feng-Liu Type Fixed Point Theorems for Multivalued Mappings
Gülhan Mınak and Ishak Altun

In this talk, considering the recent technique, which is used by Jleli and Samet for fixed points of single valued mappings, we give some results of fixed points for multivalued mappings on complete metric space. Our results are proper generalizations of some related fixed point theorems including the famous Feng-Liu’s result in the literature. We also give some examples to both illustrate and show that our results are real generalizations of mentioned theorems.

References

Ishak Altun: Department of Mathematics, Faculty of Science and Arts, Kirikkale University, 71450 Yahsihan, Kirikkale, Turkey, ishakaltun@yahoo.com
Gülhan Mınak: Department of Mathematics, Faculty of Science and Arts, Kirikkale University, 71450 Yahsihan, Kirikkale, Turkey, g.minak.28@gmail.com
Qualitative Analysis for the Differential Equation Associated to the Dynamic Model for an Access Control Structure
Daniela Coman, Adela Ionescu and Sonia Degeratu

This paper presents some analytical considerations regarding the dynamical behavior of an access control structure, based on the mathematical model associated to this structure.

This structure type is large analyzed in the literature. A modern approach of this structure based on SMA (shape memory alloy) is taken into account, because of some particular advantages due: unique characteristics (superalastic effect, as well as the single and double shape memory effects), damping capacity of noise and vibration, simplify and lower weight structure, high resistance to corrosion and wear, resistance to fatigue (which can occur even after hundreds of thousands of cycles), diversification of the control and command possibilities.

The qualitative analysis of the mathematical model associated to this structure is taken into account. Namely, the differential equation associated to the variation of the angle describing the position of the access control structure is analyzed from the influence of parameters standpoint. The MAPLE11 soft is used in order to evaluate the behavior of the equation solution with respect to the parameters variation.

This analysis produces a data collection which is useful both for further developing a fuzzy logic controller for the active control of this access structure and for further refinements of the mathematical model associated to this structure type.

References


Daniela Coman: Department of Engineering and Management of Technological Systems, Faculty of Mechanics, University of Craiova, Calugareni Str no1, 220037, Romania, amdcoman@yahoo.com
Adela Ionescu: Department of Applied Mathematics, University of Craiova, Al. I. Cuza 13, Craiova 200585, Romania, adela0404@yahoo.com
Sonia Degeratu: Faculty of Automatics, Department of Electromechanics, 107 Decebal Blvd., 200440, University of Craiova, Romania, sdegeratu2004@yahoo.com

This work was partially supported by the grant number 7C/2014, awarded in the internal grant competition of the University of Craiova.
213 Zagreb Indices of Double Graphs

Aysun Yurttas, Muge Togan and Ismail Naci Cangul

In this presentation, authors will give some new results and inequalities on several types of Zagreb indices for double graphs.

References


Uludag University, Department of Mathematics, Gorukle 16059 Bursa, Turkey, ayurttas@uludag.edu.tr, capkinm@uludag.edu.tr, cangul@uludag.edu.tr

The authors are supported by the Commission of Scientific Research Projects of Uludag University, project numbers 2012/15, 2012/19, 2012/20 and 2013/23.
Several Zagreb Indices of Subdivision Graphs of Double Graphs
Muge Togan, Aysun Yurttas and Ismail Naci Cangul

In this presentation, authors study the subdivision graphs of the double graphs of certain graph types and give some new results and inequalities on several types of Zagreb indices for subdivision graphs of double graphs.

References

215 On the Solutions of the Diophantine Equation $x^n + p \cdot y^n = p^2 \cdot z^n$

Caner Ağaoğlu and Musa Demirci

In this paper we considered the Diophantine equation

$$x^n + p \cdot y^n = p^2 \cdot z^n$$  \hspace{1cm} (215.1)

when $n \geq 2$ and $x, y, z$ are positive integers. Some special cases of (215.1) was already undertaken in the literature. In general form (215.1) we used Fermat’s Method of Infinite Descent (FMID) to determine the existence of solutions.

References


216  A Weak Contraction Principle in Partially Ordered Cone Metric Space with Three Control Functions
Binayak S. Choudhury, L. Kumar, T. Som and N. Metiya

In this paper we utilize three functions to define a weak contraction in a cone metric space with a partial order and establish that this contraction has necessarily a fixed point either under the continuity assumption or an order condition which we state here. The uniqueness of the fixed point is also derived under some additional assumptions. The result is supported with an example. The methodology used is a combination of order theoretic and analytic approaches.
On the Diophantine Equation \((20n)^x + (99n)^y = (101n)^z\)

Gokhan Soydan, Musa Demirci and Ismail Naci Cangul

For a positive integer \(n\), the triple \((a, b, c)\) with \(a = u^2 - v^2\), \(b = 2uv\), \(c = u^2 + v^2\), \(u > v > 0\), \(2 \mid uv\), \((u, v) = 1\) satisfies \(a^2 + b^2 = c^2\). There are conjectures and results on

\[ (an)^x + (bn)^y = (cn)^z \]  \hspace{1cm} (217.1)

with \(x, y, z \in \mathbb{Z}^+\). \((x, y, z) = (2, 2, 2)\) satisfies (217.1). In 1956, Sierpinski, [6], showed that (217.1) has no other solution when \(n = 1\) and \((a, b, c) = (3, 4, 5)\) and Jeśmanowicz, [3], proved that when \(n = 1\) and \((a, b, c) = (5, 12, 13), (7, 24, 25), (9, 40, 41), (11, 60, 61)\), only solution is \((x, y, z) = (2, 2, 2)\). He conjectured that (217.1) has no positive integer solutions other than \((x, y, z) = (2, 2, 2)\). In 1959, Lu, [5], proved that (217.1) has the unique solution \((x, y, z) = (2, 2, 2)\) if \(n = 1\) and \((a, b, c) = (4k^2 - 1, 4k, 4k^2 + 1)\). In 1998, Deng and Cohen, [1], proved that Jeśmanowicz conjecture is true for \((a, b, c) = (3, 4, 5)\). In 1999, Le, [4], gave certain conditions for (217.1) to have positive integer solutions \((x, y, z)\) with \((x, y, z) \neq (2, 2, 2)\). Recently several authors showed that Jeśmanowicz conjecture is true with \(2 \leq k \leq 4\) and \(k = 8\). In 2013, Tang and Yang, [7], dealt with the case \(k = 2\) and Deng, [2], also wrote a general paper covering this case. In 2012, Zhijuan and Jianxin, [9], discussed the case \(k = 3\). Deng, [2], studied the case \(k = 2s, 1 \leq s \leq 4\) and this covers the case \(k = 4\). Finally the case \(k = 8\) is covered by Tang and Weng, [8], where the authors considered a special case \((n = 3)\) that \(c\) is a Fermat number \(c = F_n = 2^{2^n} - 1, a = F_n - 2\) and \(b = 2^{2^n - 1} + 1\) for \(n \geq 1\). Next we consider (217.1) with \((a, b, c) = (20, 99, 101)\) and conclude that (217.1) has no solution other than \((x, y, z) = (2, 2, 2)\).

References

In this talk, we consider an approximation theorem of common fixed points of nonexpansive mappings in a Hadamard space. Saejung [2] obtained that a Halpern type iteration with a nonexpansive mapping converges strongly to the fixed point in a Hadamard space. We introduce that another style of Halpern type iteration with multiple nonexpansive mappings converges strongly to the common fixed point in a Hadamard space. Kimura, Takahashi and Toyoda [1] proved the approximation of common fixed points of a finite family of nonexpansive mappings in a uniformly convex Banach space whose norm is Gateaux differentiable. We obtain the main result under similar conditions of theirs. In the known results, the anchor point of Halpern type iteration is single, however the anchor points of our iterative sequence are multiple.

References

219 Multimaps in Fixed Point Theorems in Terms of Measure of Noncompactness
Mehdi Asadi

We present some of fixed point theorems for multimaps in fixed point theory and applications on measure of noncompactness. The main results are formulated in terms of definition of measure of noncompactness. Our theorems extend in a broad sense some new and classical results.

Department of Mathematics, Zanjan Branch, Islamic Azad University, Zanjan, Iran, masadi.azu@gmail.com
220  Pointwise Approximation in \( L^p \) Space by Double Singular Integral Operators

Mine Menekşē Yılmaz, Gümrah Uysal and Ertan Ibikli

In this talk, we will prove the pointwise approximation of \( L_\lambda(f,x,y) \) to \( f(x_0,y_0) \), as \( (x,y,\lambda) \) tends to \( (x_0,y_0,\lambda_0) \) small in the space \( L^p \) by double singular integral operators at the characteristic point.

References

[1] A. D.Gadjiev, On the order of convergence of singular integrals which depending on two parameters. Special Prob. of
(1968), 40–44.
[2] H. Karsli, and E. Ibikli, On convergence of convolution type singular integral operators depending on two parameters,
Some Tauberian Remainder Theorems for Iterations of Weighted Mean Methods of Summability
Sefa Anıl Sezer and İbrahim Çanak

In this study, our aim is to retrieve $\lambda-$boundedness of a real sequence from its $\lambda-$boundedness by $(\mathcal{N}, p, k)$ summability method. To that end, we provide several Tauberian remainder theorems for the $(\mathcal{N}, p, k)$ summability method using the general control modulo of the oscillatory behavior given by Dik [2].

References

Sefa Anıl Sezer: Ege University, Faculty of Science, Department of Mathematics, İzmir-Turkey and İstanbul Medeniyet University, Faculty of Science, Department of Mathematics, İstanbul-Turkey, sefa.anil.sezer@ege.edu.tr or sefaanil.sezer@medeniyet.edu.tr

İbrahim Çanak: Ege University, Faculty of Science, Department of Mathematics, İzmir-Turkey, ibrahim.canak@ege.edu.tr
222 On The Semi-Fredholm Spectrum
Arzu Akgül

In this talk, a version of semi Fredholm joint spectrum for families of noncommuting operators is defined. Moreover, by using homological methods and the connections between Fredholm joint spectrum and upper-semi Fredholm and lower-semi Fredholm spectrum, spectral mapping theorem is proved and some properties of semi Fredholm spectrum are investigated.

References

Kocaeli University, Faculty of Science and Arts, Department of Mathematics, Kocaeli, akgul@kocaeli.edu.tr
Critical Fixed Point Theorems in Banach Algebras Under Weak Topology Features
A. Ben Amar and A. Tlili

In this paper we prove some new fixed point theorems for weakly sequentially continuous operators of type \( x = Ax + Bx + Cx \) in a Banach algebra. For this purpose, we introduce the concept of multi-valued mappings under conditions of weak topology. We also provide some new results concerning the sum and the product of nonlinear weakly sequentially continuous mappings in a Banach algebra satisfying a certain sequential condition (P).

References
224  Modeling of Effect of the Components of Distance Education in Achievement of Students

Hamit Armagan, Tuncay Yigit and Ahmet Sahiner

Distance education is a kind of education that brought together course advisor, student and educational materials in a different time and place through communicational technologies. In this educational system the success of education is directly related to audio, video and interaction. In this study, a model is created by using fuzzy logic with the success of distance education students and the components of distance education. In addition, with a global optimization method it is determined which are the highest student achievement points.

References


Hamit Armagan: Suleyman Demirel University, Department of Information, Isparta/Turkiye, hamitarmagan@sdu.edu.tr
Tuncay Yigit: Suleyman Demirel University, Faculty of Engineering, Department of Computer Engineering, Isparta/Turkiye, tuncayyigit@sdu.edu.tr
Ahmet Sahiner: Suleyman Demirel University, Faculty of Art and Science, Department of Mathematics, Isparta/Turkiye, ahmetsahiner@sdu.edu.tr
225 On the Weighted Integral Inequalities for Convex Function
Mehmet Zeki Sarıkaya and Samet Erden

In this talk, we establish several weighted inequalities for some differentiable mappings that are connected with the celebrated Hermite-Hadamard-Fejér type and Ostrowski type integral inequalities. The results presented here would provide extensions of those given in earlier works.

References


Mehmet Zeki Sarıkaya: Düzce University, Faculty of Science and Arts, Department of Mathematics, Düzce-Turkiye, sarikayamz@gmail.com
Samet Erden: Bartın University, Faculty of Science, Department of Mathematics, Bartın-Turkiye, erdem1627@gmail.com


List of Participants

1. A.A. Dosiyev: Eastern Mediterranean University
2. A. Laifa: Université du 20 août 1955-Skikda
3. A. Lebaroud: Université du 20 août 1955-Skikda
4. A. Medoued: Université du 20 août 1955-Skikda
5. A. R. Aithal: University of Mumbai
6. A. R. Bindusree: Sree Narayana Gurukulam College of Engineering
7. A. Tatarkzak: Maria Curie-Sklodowska University in Lublin
8. A. Taran Gürkan: Istanbul Arel University
9. Abdelmalek Mohammed: Ecole préparatoire en sciences économiques
10. Abdessalem Benammar: Welding and NDT Research Center (CSC)
11. Abdullah Çavuş: Karadeniz Technical University
12. Abdullah Derti: Ondokuz Mayis University
13. Abdullah Özbekler: Atılım University
14. Abdurrahman Dayioglu: Uludağ University
15. Acushla Sarswat: University of Mumbai
16. Adela Ionescu: University of Craiova
17. Ademi Ospanova: L.N. Gumilyov Eurasian National University
18. Adnan Kılıç: Uludağ University
19. Ahmed Ghezal: University of Constantine 1
20. Ahmed Khechida: Welding and NDT Research Center (CSC)
21. Ahmet Emin: Balikesir University
22. Ahmet Sinan Çevik: Selçuk University
23. Ahmet Şahiner: Suleyman Demirel University
24. Ahu Açkıgoz: Balikesir University
25. Aiman Mukheimer: Prince Sultan University
26. Ailen Osançol: Sabancı University
27. Ali Akgül: Dicle University
28. Ali Aral: Kirikkale University
29. Ali Demir: Kocaeli University
30. Anuj Kumar: Banaras Hindu University
31. Arzu Denk Oguz: Ege University
32. Arzu Akgül: Kocaeli University
33. Arzu Özkoç: Düzce University
34. Ash Ayten Kaya: Uludag University
35. Aydin Tiryaki: Izmir University
36. Aykut Ahmet Ayguneş: University of Akdeniz
37. Aynur Şahin: Sakarya University
38. Aynur Yalçınkaya: Selçuk University
39. Ayşin Yurttas: Uludag University
40. Ayşe Feza Güvenilir: Ankara University
41. Ayşe Sandıkç: Ondokuz Mayis University
42. Ayşegül Akyüz-Daşçıoğlu: Pamukkale University
43. Ayten Pekin: Istanbul University
44. Aziz Halit Gozel: Adiyaman University
45. Basri Celik: Uludağ University
46. Belmeguenai Aissa: Universite 20 Aout 1955-Skikda
47. Benmansour Safia: Ecole préparatoire en sciences économiques
48. Bilal Demir: Balikesir University
49. Bilel Mefteh: Sfax University
50. Billur Kaymakcalan: Çankaya University
51. Binayak S. Choudhury: Bengal Engineering and Science University
52. Boughazi Hichem: Preparatory School in Economics
53. Boumediene Abdellaoui: Université Abou Bakr Belkaid
54. Burcin Simsek: University of Pittsburgh
55. Burcu Öztürk: Trakya University
56. C.S. Ryoo: Hannam University
57. C. S. Ryoo: Hannam University
58. Can Murat Dikmen: Bulent Ecevit Universitesi
59. Caner Aşoğlu: Uludag University
60. Canybec Sulayman: University of California
61. Cengiz Akay: Uludağ University
62. Chandrashekar Adiga: University of Mysore
63. Çetin Yıldız: Atatürk University
64. D. Azzam-Laouir: University of Jijel
65. D. Sayad: Université du 20 août 1955-Skikda
66. Daeyeoul Kim: National Institute for Mathematical Sciences
67. Dalila Azzam-Laouir: Université de Jijel
68. Daniela Bîmová: Technical University of Liberec
69. Daniela Bittnerová: Technical University of Liberec
70. Daniela Coman: University of Craiova
71. Dib Djadel: University of Tebessa
72. Djavvat Khadjiev: Karadeniz Technical University
73. Djezzar Salah: University of Constantine 1
74. Dmitry V. Kruchinin: Tomsk State University of Control Systems and Radioelectronics
75. Doria Affane: Université de Jijel
76. Durhasan Turgut Tollu: Necmettin Erbakan University
77. Duygu Dönmez Demir: Celal Bayar University
78. Duygu Yılmaz Eroğlu: Uludağ University
79. Ebru Özbilge: İzmir University of Economics
80. Ekber Girgin: Sakarya University
81. Ekrem Savaş: İstanbul Ticaret University
82. Elif Aydın: Ondokuz Mayıs University
83. Elif Çetin: Uludağ University, Celal Bayar University
84. Elif Erçelik: Gebze Institute of Technology, İstanbul Technical University
85. Elvan Akin: Missouri University Science Technology
86. Emin Msurlu: Ege University
87. Emrah Kılıçoğlu: TOBB University of Economics and Technology
88. Emrah Yılmaz: Firat University
89. Emre Deniz: Kırıkkale University
90. Emrullah Yaşar: Uludağ University
91. Erdal Çetin: Ege University
92. Erdal Karapınar: Atilim University
93. Erdem Toksoy: Ondokuz Mayıs University
94. Erhan Koca: Celal Bayar University
95. Ertan İbkili: Ankara University
96. Esen Iyiğün: Uludağ University
97. Esra Kamber: Sakarya University
98. Esra Karataş: Çanakkale Onsekiz Mart University
99. Eylem Güzell Karpuz: Karamanoğlu Mehmetbey University
100. F.Aliouane: University of Jijel
101. F.Mahmoudi: Universidad de Chile
102. Farrukh Mukhamedov: International Islamic University Malaysia
103. Fatih Kızılaslan: Gebze Institute of Technology
104. Fatma Çalışkan: Istanbul University
105. Fatma Kanca: Kadir Has University
106. Fatma Karakoç: Ankara University
107. Fatma Özen Erdoğan: Uludağ University
108. Fatma Serap Topal: Ege University
109. Fatma Tokmak: Gazi University and Ege University
110. Fayçal Hamdi: RECITS Laboratory
111. Fırat Ateş: Balıkesir University
112. Figen Öke: Trakya University
113. Florian Munteanu: University of Craiova
114. Fuad Kittaneh: The University of Jordan & Jordan and Al-Ahliyya Amman University
115. Fulya Yoruk Deren: Ege University
116. Fumiaki Kohsaka: Oita University
117. Gabil Adilov: Akdeniz University
118. Georgy A. Omel’yanov: Universidad de Sonora
119. Gonca Durmaz: Kirikkale University
120. Gökhan Soydan: Uludağ University
121. Guettal Djaouida: University Ferhat Abbas of Setif 1
122. Gurunath Rao Vaidya: Acharya Institute of Graduate Studies
123. Gülşen Bardakçı: İstanbul Technical University
124. Gülşen Kapusuz: Suleyman Demirel University
125. Gülşah Yeni: Missouri University of Science and Technology
126. Gümrük Uysal: Karabuk University
127. Gülsüm Ulusoy: Kirikkale University
128. H.Cenk Ozmutlu: Uludağ University
129. H.M.Sadeghi: Eastern Mediterranean University
130. Hacer Şengül: Siirt University
131. Hakan Avci: Ondokuz Mayıs University
132. Halis Aygün: Kocaeli University
133. Hamit Mottaghí Golshan: Islamic Azad University
134. Hamit Armagan: Suleyman Demirel University
135. Handan Engin Kırmılı: Uludağ University
136. Harun Karsli: Abant Izzet Baysal University
137. Hasan Akın: Zirve University
138. Hatice Yalçın: Düzce University
139. Hacer Şengül: Siirt University
140. Hakan Avci: Ondokuz Mayıs University
141. Halis Aygün: Kocaeli University
142. Hamit Mottaghí Golshan: Islamic Azad University
143. Hamit Armagan: Suleyman Demirel University
144. Handan Engin Kırmılı: Uludağ University
145. Harun Karsli: Abant Izzet Baysal University
146. Hasan Akın: Zirve University
147. Hatice Yalçın: Düzce University
141. Hendra Gunawan: Institute of Technology Bandung
142. Hesna Kabadayi: Ankara University
143. Hideyuki Wada: Toho University
144. Hikmet Koyunbakan: Fırat University
145. Hüseyin Bereketoğlu: Ankara University
146. Hüseyin Ovalıoğlu: Uludağ University
147. İbtissam Bouloukza: University of 20 August 1955
148. İlkınur Yesilçe: Mersin University
149. İsmail U.Tiryaki: Abant Izzet Baysal University
150. İzhar Uddin: Aligarh Muslim University
151. İ.İlker Ağaç: Eskişehir Osmangazi University
152. İbrahim Çanak: Ege University
153. İlhan Kıcık: Uludag University
154. İlker Yaslan Karaca: Ege University
155. İlker Kıcık: Uludag University
156. İlker Burak Giresunlu: Uludag University
157. İnci M.Erhan: Atılım University
158. İrem Bağlan: Kocaeli University
159. İşak Altun: Kirikkale University
160. İsmail Aydın: Sinop University
161. İsmail Naci Cangül: Uludag University
162. İsmet Karaca: Ege University
163. J.Davila: Universidad de Chile
164. J.Y.Kang: Hannam University
165. Jasbir S. Manhas: Sultan Qaboos University
166. K.Biroud: Université Abou Bakr Belkaïd
167. Kadir Emir: Eskişehir Osmangazi University
168. Kadir Ertürk: Namık Kemal University
169. Kathryn E.Hare: University of Waterloo
170. Kenan Tas: Cankaya University
171. Kubra Erdem Bicer: Celal Bayar University
172. Kyung Soo Kim: Kyungnam University
173. L.Kumar: Banaras Hindu University
174. Lashab Mohamed: Université 20 Août 1955-Skikda
175. Leili Kussainova: L.N. Gumilyov Eurasian National University
176. Luminita Grecu: University of Craiova
177. M.Emin Özdemir: Atatürk University
178. M.Hariour: Badji Mokhttar-Annaba University
179. M.Imdad: Aligarh Muslim University
180. M.C.Bouras: Badji Mokhttar-Annaba University
181. M.S.Jusoh: Universiti Teknologi MARA
182. M.N.M.Fadzil: Universiti Teknologi MARA
183. M.S.M.Noorani: Universiti Kebangsaan Malaysia
184. Mahpeyker Öztürk: Sakarya University
185. Mansouri Khaled: Université 20 Août 1955-Skikda
186. Masashi Toyoda: Tamagawa University
187. Matallah Atika: Ecole préparatoire en sciences économiques
188. Meenu Goyal: Indian Institute of Technology Roorkee
189. Mehdi Asadi: Islamic Azad University
190. Mehmet Ali Özarslan: Eastern Mediterranean University
191. Mehmet Emir Koksal: Mevlana University
192. Mehmet Yüksel: Çukurova University
193. Mehmet Zeki Sarıkaya: Duzce University
194. Merve Güney Duman: Sakarya University
195. Meryem Odabasi: Ege University
196. Meryem Öztop: Süleyman Demirel University
197. Mesliza Mohamed: Universiti Teknologi MARA
198. Messaoudene Hadia: University of Tebessa
199. Metin Başarır: Sakarya University
200. Mikail Et: Firat University
201. Mine Menekşe: Gaziantep University
202. Mochammad Idris: Institute of Technology Bandung
203. Mohamed Amine Boutiche: Université des sciences et de la Technologie Houari Boumediene
204. Mohamed Dalah: University of Constantine 1
205. Mohammed Derhab: University Abou-Bekr Belkaid Tlemcen
206. Mohamed Najib Ellouze: Sfax University
207. Mohammed Nehari: University Ibn Khaldoun Tiaret
208. Mourad Jelassi: Carthage University
209. Mourad Mordjaoui: University of 20 August 1955
210. Mourad Rahmani: USTHB
211. Moustafa El-Shahed: Qassim University
212. Muge Togan: Uludag University
213. Murteza Yılmaz: TOBB University of Economics & Technology
214. Musa Demirci: Uludag University
215. Mustafa Alkan: University of Akdeniz
216. Mustafa Inc: Firat University
217. Mustafa Kara: Eastern Mediterranean University
218. Mustafa Kazaz: Celal Bayar University
219. Mustafa Nadar: Istanbul Technical University
220. Mustafa Özkan: Trakya University
221. Mustafa Topaksu: Çukurova University
222. Mustapha Yarou: Jijel University
223. Mutlay Dogan: Zirve University
224. N.Metiya: Bengal Institute of Technology
225. N.M.Badiger: Karnataka University
226. Nazim Idrisoğlu Mahmudov: Eastern Mediterranean University
227. Nazli Yıldız İkikardes: Balıkesir University
228. Nazmiye Yılmaz: Selçuk University
229. Necati Taskara: Selçuk University
230. Neslihan Nesliye Pelen: Middle East Technical University
231. Neşe İşler Acar: Mehmet Akif Ersoy University
232. Neşe Özmür: Koçaeli Üniversitesi
233. Nihal Yılmaz Özgür: Bälìkesir University
234. Nihal Taş: Bälìkesir University
235. Nihal Yokuş: Karamanoglu Mehmetbey University
236. Nihat Akgunes: Necmettin Erbakan University
237. Nil Küçük: Uludag University
238. Nilay Sager: Ondokuz Mayis University
239. Nilgun G. Baydar: Suleyman Demirel University
240. Nouiri Brahim: University of Laghouat
241. Noor Halimatus Sa'diah Ismail: Universiti Teknologi MARA
242. Nuket Aykut Hamal: Ege University
243. Nurullah Yilmaz: Suleyman Demirel University
244. Nursel Öztürk: Uludag University
245. Ozan Demiroz: Suleyman Demirel University
246. Ozkan Coban: Suleyman Demirel University
247. Ömer Akgül: Muğla Sitki Koçman University
248. Ömer Kişi: Cumnuriyet University
249. Özden Koruoğlu: Balikesir University
250. Özgür Ege: Celal Bayar University
251. Özlem Acan: Kirikkale University
252. Özlem Orhan: İstanbul Technical University
253. Özrur Kulak: Ondokuz Mayis University
254. Özrur Öztunç: Balikesir University
255. P.N. Agrawal: Indian Institute of Technology Roorkee
256. P.S.K. Reddy: S.I.T
257. R. Saian: Universiti Teknologi MARA
258. P. Shahi: Thapar University
259. Patricia J. Y. Wong: Nanyang Technological University
260. Rahal Mohamed: University Ferhat Abbas of Setif 1
261. Rahime Dere: University of Akdeniz
262. Rajai Alassar: King Fahd University of Petroleum & Minerals (KFUPM)
263. Ranjini P.S: Don Bosco Institute of Technology
264. Ravi Agarwal: Texas A&M University-Kingsville
265. Raziyi Akbay: Suleyman Demirel University
266. Recep Şahin: Balikesir University
267. Redouane Drai: Welding and NDT Research Center (CSC)
268. Refik Keskin: Sakarya University
269. Reyhane Erçan: Suleyman Demirel University
270. Romulus Militaru: University of Craiova
271. Ruhan Zhao: State University of New York (SUNY)
272. Rüstem Kaya: Eskisehir Osmangazi University
273. S. Kanas: University of Rzeszow
274. S. K. Upadhyay: Indian Institute of Technology
275. S. Mahdi: Badji Mokhttar-Annaba University
276. Said Grace: Cairo University
277. Salih Yalcinbas: Celal Bayar University
278. Safa Menkad: Hadj Lakhdar University
279. Safia Benmansour: Preparatory School of Economics of Tlemcen
280. Samet Erdem: Bartın University
281. Sandeep Kumar: Acharya Institute of Technology
282. Sanjiv K.Gupta: Sultan Qaboos University
283. Sathish Kumar: Indian Institute of Technology Roorkee
284. Satish Iyengar: University of Pittsburgh
285. Sebahattin Ikikardes: Balikesir University
286. Seda Oğuz: Cumhuriyet University
287. Seda Oral: Celal Bayar University
288. Seda Öztürk: Karadeniz Technical University
289. Sefa Anıl Sezer: Ege University
290. Selçuk Kayacan: Istanbul Technical University
291. Selma Altundağ: Sakarya University
292. Selma Gulyaz: Cumhuriyet University
293. Sertaç Erman: Kocaeli University
294. Servet Kutukçu: Ondokuz Mayas University
295. Seval Erc: Uludag University
296. Seyda Ildan: Selcuk University
297. Sibel Paşalı Atmaca: Muğla Sıtkı Koçman University
298. Sinem Şahiner: İzmir University
299. Sinem Ünlü: Eastern Mediterranean University
300. Smail Kelaiiaia: University of Annaba
301. Snejana Hristova: Plovdiv University
302. Sonia Degeratu: University of Craiova
303. Soumia Kharfouchi: Université 3 Constantine
304. Sümeyra Uçar: Balikesir University
305. Süleyman Çiftçi: Uludag University
306. Teoman Özer: İstanbul Technical University
307. Tevfik Şahin: Amasya University
308. Tugba Senlik: Ege University
309. Uğur Yüksel: Atilim University
310. Ummahan Akcan: Anadolu University
311. Umut Totur: Adnan Menderes University
312. Umut Sarp: Balikesir University
313. Ulucan Konca: Sakarya University, Bitlis Eren University
314. Umut Şahin: Anadolu University
315. Umut Sarp: Balikesir University
316. Ummügülsum Öğüt: Sakarya University
329. V. Lokesha: Vijayanagara Sri Krishnadevaraya University
330. Valery Gaiko: National Academy of Sciences of Belarus
331. Veli Kurt: University of Akdeniz
332. Vildan Çetkin: Kocaeli University
333. Vishwanath P. Singh: Karnatak University
334. Vladimir V. Kruchinin: Tomsk State University of Control Systems and Radiophysics
335. Wan Zheng-su: Hunan Institute of Science and Technology
336. Yasemin Cengellenmiş: Trakya University
337. Yasin Yazlık: Nevşehir Hacı Bektaş Veli University
338. Yasunori Kimura: Toho University
339. Yaşar Bolat: Kastamonu University
340. Yavuz Selim Balkan: Duzce University
341. Yılmaz Simsek: University of Akdeniz
342. Young-Ho Kim: Changwon National University
343. Zdzislaw Rychlik: Maria Curie-Skłodowska University
344. Zehra Sarıgedik: Celal Bayar University
345. Zennir Khaled: University 20 Aout 1955
346. Zerrin Önder: Ege University
347. Zhang Xiao-yong: Shanghai Maritime University