Schedule RoGer 2014

Location:
Lucian Blaga University of Sibiu
Center for Academic Meetings
Banatului Street 6, Sibiu

Thursday 29 May

14:00-19:00 Reception

19:00-20:00 Welcome Cocktail

Friday 30 May

09:00-10:00 Opening Ceremony (Aula Avram Iancu, Victoriei Street, No. 5-7, Sibiu)

Speech:

Assoc. Prof. Dr. Florin Sofonea-Organizer of RoGer 2014

Prof. Dr. Ing. Ioan Bondrea-Rector of Lucian Blaga University of Sibiu

Assoc. Prof. Dr. Angela Bănăduc-Dean of Faculty of Sciences

Prof. Dr. Mugur Acu-Director of Department of Mathematics and Informatics

Plenary Lecture:

Prof. Dr. Heiner Gonska, Academician Prof. Dr. D.D. Stancu (1927 - 2014): his influence on my mathematical work

10:00-10:30 Coffee break

Plenary Lecture

10:30-11:00 Margareta Heilmann, *k-th order Kantorovich type modification of the operators* U_n^ρ

Lecture

Chairman: Heiner Gonska

11:00-11:15 Mircea Ivan, *Some inequalities on Legendre polynomials*

11:15-11:30 Radu Păltănea, *Approximation of fractional derivatives*

11:30-11:45 Gülen Başcanbaz-Tunca, *A generalization of Post-Widder operators based on q-integers*

11:45-12:00 Coffee break

Chairman: Mircea Ivan

12:00-12:15 Cristinel Mortici, *The Hyers-Ulam stability of a functional equation with bounded solutions*

12:15-12:30 Gabriel Stan, *A Voronovskaya-type result for a generalized Baskakov- Durmeyer operator*

12:30-12:45 Bogdan Gavrea, *A Newton-Monte Carlo method for solving scalar equation*

12:45-13:00 Marius Dadarlat, *Finite dimensional approximations of linear operators*

13:00-13:15 Voichiţa Adriana Radu, *Academician Professor D.D. Stancu : a life time dedicated to the numerical analysis and theory of approximation*

13:15-13:30 Andrei Vernescu, *Acad. Prof. D. D. Stancu, a respectful remember and a deep homage*

13:30-13:45 Özlem Acar, *Fixed point theorems for weak contractions*

Plenary Lecture

15:00-15:30 Antonio-Jesús López-Moreno, *Asymptotic properties of multivariate Durrmeyer type operators*

Lecture

Chairman: Ioan Gavrea

15:30-15:45 Tuncer Acar, *On the generalized Bernstein-Durrmeyer operators*

15:45-16:00 Ali Aral, *A new type Bernstein-Durrmeyer operators*

16:00-16:15 Valentin Gabriel Cristea, *The volume of the unit n-dimensional ball. A review*

16:15-16:30 Vishnu Narayan Mishra, *Some approximation properties of Baskakov-Szasz-Stancu operators*

16:30-16:45 Coffee break

Chairman: Radu Păltănea

16:45-17:00 Alina Baboş, *Interpolation operators on a triangle with one curved side*

17:00-17:15 Daniela Inoan, *A de Casteljau type algorithm in matrix form*

17:15-17:30 Marius Birou, *About a linear positive operator which preserves test functions e_0 and e_2*

17:30-17:45 Eugen Constantinescu, *Remarks on a class of quadrature formulas*

17:45-18:00 Adrian Gîrjoaba, *Bernstein's theorem on minimal surfaces, a computer aided proof*

18:00-18:15 Iuliana Sprintu, *New mathematical model for composite thin plates with different boundery conditions*

18:15-18:30 Ioana Rădulescu, *Chen invariants for Sasakian manifolds*

Saturday 31 May

Plenary Lecture

09:00-09:30 Heiner Gonska, *Grüss-Voronovskaya estimates for Bernstein-type operators*

Lecture

Chairman: Heilmann Margareta

09:30-09:45 Dana Simian, *Characterization of a flexible cubic Bezier interpolation scheme*

09:45-10:00 Elena Stănilă, *Chebyshev-Grüss-Type Inequalities for the Bernstein-Euler-Jacobi Operators (I)*

10:00-10:15 Maria Daniela Rusu, *Chebyshev-Grüss-Type Inequalities for the Bernstein-Euler-Jacobi Operators (II)*

10:15-10:30 Aurelia Florea, *Some extensions of Fink's inequality*

10:30-10:45 Ana Maria Acu, *Approximation properties of bivariate extension of q-Schurer-Kantorovich operator*

10:45-11:00 Coffee break

Plenary Lecture

11:00-11:30 Octavian Agratini, *Linear approximation processes of integral type*

Chairman: Cristinel Mortici

11:30-11:45 Emilia Loredana Pop, *Connections between vector optimization problems, their solutions and saddle points*

11:45-12:00 Sorinel Dumitrescu, *Ramanujan type formulas for approximating the gamma function. A survey*

12:00-12:15 Nicuşor Minculete, *Two reverse inequalities of Bullen's inequality and several applications*

12:15-12:30 Ana Maria Acu, *Error bounds for a class of quadrature formulas*

12:30-12:45 Emil C. Popa, *Some inequalities for the Landau constants*

12:45-13:00 Ioan Ţincu, *Characterization theorems of Jacobi and Laguerre polynomials*

15:00-16:00 Visiting the ASTRA Library, Sibiu

17:00 Departure to Păltiniş

18:00-22:00 Official Dinner

Acar Özlem, Altun Ishak

Title: Fixed point theorems for weak contractions

Abstract. In this talk, we present some fixed point results in partial metric space by new concepts which are the notion of (δ, L) weak contraction and (φ, L) weak contraction in the sense of Berinde.

Acar Tuncer, Aral Ali

Title: A new type Bernstein-Durrmeyer operators

Abstract. The present paper deals with a new type of Bernstein-Durrmeyer operators on mobile interval. First, we represent the operators in terms of hypergeometric series. We also establish local and global approximation results for these operators in terms of modulus of continuity. We obtain an asymptotic formula for these operators and in the last section we present better error estimation for the operators using King type approach.

Acu Ana Maria, Rafiq Arif, Sofonea Florin, Barbosu Dan

Title: Error bounds for a class of quadrature formulas

Abstract. A class of optimal quadrature formulas in sense of minimal error bounds are obtained. The estimations of remainder term will be given in terms of variety of norms, from an inequality point of view. Some improvements and generalizations of some results from literature will be considered.

Agratini Octavian

Title: Linear approximation processes of integral type

Abstract. We present classes of linear positive operators of integral type. Approximation properties are explored such as the rate of convergence, uniform approximation over unbounded intervals, convergence in some weighted spaces, statistical convergence. Special cases are highlighted.

Aral Ali, Raşa Ioan, Acar Tuncer

Title: On the generalized Bernstein-Durrmeyer operators

Abstract. In the present paper we introduce new Bernstein-Durrmeyer type operators based on a function τ which has derivatives of all orders on $[0,1]$, such that $\tau(0) = 0$, $\tau(1) = 1$ and $\tau'(x) > 0$ for $x \in [0,1]$. Depending on the selection of τ, the rate of convergence of the new operators can be better than that of the classical Bernstein-Durrmeyer operators. We present an asymptotic formula and quantitative results concerning the convergence. Later we give comparisons with classical Bernstein-Durrmeyer operators. We obtain some direct results for the new operators in terms of the Ditzian-Totik modulus of smoothness. Finally a graphical example is presented.

Baboş Alina

Title: Interpolation operators on a triangle with one curved side

Abstract. We construct Hermite and Birkhoff-type operators, which interpolate a given function and some of its derivatives on some interior lines of a triangle with one curved side. We consider the case when the interior line is a median. We also consider some

of their product and Boolean sum operators. We study the interpolation properties and the degree of exactness of the constructed operators.

Başcanbaz-Tunca Gülen

Title: A generalization of Post-Widder operators based on q-integers

Abstract. In this talk, a q-generalization of the classical Post-Widder operators is introduced. The Voronovskaja-type approximation result and rate of the convergence is obtained. Approximation property of the q-Post-Widder operators in a weighted space is given and the rate of convergence is measured by means of the weighted modulus of continuity.

Birou Marius

Title: About a linear positive operator which preserves test functions e_0 and e_2

Abstract. In this paper we present an operator which preserves the test functions e_0 and e^2. We compare this operator with the classical Durrmeyer operator.

Constantinescu Eugen, Branga Adrian

Title: Remarks on a class of quadrature formulas

Abstract. In this paper we propose to find a class of quadrature formulas with higher degree of exactness and moreover possess a Peano kernel that does not change the sign. We present a new method that allows us to study the remainder operator based on the properties of a set of linear and positive functionals.

Cristea Valentin Gabriel

Title: The volume of the unit n-dimensional ball. A review.

Abstract. The aim of this survey is to present recent research on the problem of estimating the volume of the unit n-dimensional ball. Some results from the theory of approximating the gamma function are used. Finally, some inequalities on the area of the unit n-dimensional ball are given.

Dadarlat Marius

Title: Finite dimensional approximations of linear operators

Abstract. Quasidiagonality is an important finite dimensional approximation property of linear operators and operator algebras. Voiculescu has discovered that quasidiagonality of operator algebras is a homotopy invariant. We plan to give a quick introduction to the subject and discuss a number of basic results and open problems. If time allows, we will outline some fascinating connections with algebraic topology and noncommutative geometry.

Dumitrescu Sorinel

Title: Ramanujan type formulas for approximating the gamma function. A survey.

Abstract. In this survey we discuss Ramanujan formula and related formulas for approximating the gamma function as many improvemements were presented in the recent past. In the final part some new inequalities are presented.

Florea Aurelia

Title: Some extensions of Fink's inequality

Abstract. We establish some new inequalities of Fink type, in

terms of the Steffensen-Popoviciu measure. We refer to a special class of convex-concave symmetric functions. By using the convexity on the co-ordinates, we extend our results from the one-dimensional case to the multidimensional case.

Gavrea Bogdan

Title: A Newton-Monte Carlo method for solving scalar equation

Abstract. We present a simple modification of the Newthon-Raphson method for solving nonlinear scalar equations. The method can be used in a Monte-Carlo type setting which results in convergence for cases where the "standard" Newton method does not converge.

Gavrea Ioan, Ivan Mircea

Title: Some inequalities on Legendre polynomials

Abstract. We obtain some inequalities involving Legendre polynomials in connection with the sum of the squared Bernstein basis polynomials.

Gîrjoaba Adrian

Title: Bernstein's theorem on minimal surfaces, a computer aided proof

Abstract. The Bernstein's famous theorem on minimal surfaces is "proved" using MAPLE. Besides the interesting, in themselves", facts revealed by this soft, there is, again, opened the challenging debate about what is to be accepted or not, and how much, from the aide that computers are (more and more) able to give us in our study of abstract, fundamental, (not only) mathematical, phenomena.

Gonska Heiner

Title: Grüss-Voronovskaya estimates for Bernstein-type operators

Abstract. We will present a combination of Voronovskaya- and Grüss-type results for certain Bernstein-type operators. These will be inequalities which cover all the operators on the "Păltănea scale" between the genuine Bernstein-Durrmeyer and the classical Bernstein operators. We will also briefly discuss the complex case. The talk is based on joint work with Sorin Gal.

Gonska Heiner

Title: Academician Prof. Dr. D.D. Stancu (1927 - 2014): his influence on my mathematical work

Abstract. An (incomplete) survey will be given on how Prof. Stancu's publications influenced the speaker's work. Some keywords: approximation by pseudopolynomials, Hermite-Fejér interpolation, simultaneous approximation, Schoenberg splines, algorithms of de Casteljau-type.

Heilmann Margareta

Title: k-th order Kantorovich type modification of the operators U_n^ρ

Abstract. We study the k-th order Kantorovich type modification of the operators Un introduced and investigated by H. Gonska and R. Paltanea. The operators constitute a link between the classical Bernstein operators and the genuine Bernstein-Durrmeyer operators. We will present explicit formulas and recurrence relations for the images of monomials and for moments of arbritary order. The talk is based on joint work with Ioan Raşa.

Inoan Daniela, Raşa Ioan

Title: A de Casteljau type algorithm in matrix form

Abstract. We describe a de Casteljau type algorithm in matrix form for some linear operators that appear in Approximation Theory. Some monotonicity preserving properties of the operators are proved by using this algorithm.

López-Moreno Antonio-Jesús, Latorre-Palacios José-Manuel

Title: Asymptotic properties of multivariate Durrmeyer type operators

Abstract. We present some extensions of preceding results of the authors that can be used to study the asymptotic behavior and localization properties for several Durrmeyer type operators in both the univariate and the multivariate case.

References

[1] López-Moreno, A.-J., J. Martínez-Moreno and F.-J. Muñoz-Delgado, Asymptotic expression of derivatives of Bernstein operators, Proceedings of the fourth international conference on functional analysis and approximation theory, Acquafredda di Maratea (Potenza), Italy, September 22-28, 2000. Vol. II. Palermo: Circolo Matemàtico di Palermo, Suppl. Rend. Circ. Mat. Palermo, II. Ser. 68(2), 615-624 (2002).

[2] López-Moreno, A.-J. and F.-J. Muñoz-Delgado, Asymptotic expansion of multivariate conservative linear operators, J. Comput. Appl. Math. 150 2 (2003), 219–251.

[3] López-Moreno, Antonio-Jesús and José-Manuel Latorre-Palacios, Localization resuls for generalized Baskakov/Mastroianni and composite operators, J. Math. Anal. Appl. 380 2 (2011), 425–439.

Minculete Nicuşor, Dicu Petrică, Raţiu Augusta

Title: Two reverse inequalities of Bullen's inequality and several applications

Abstract. In this article we present two reverse inequalities of Bullen's inequality and several applications about the arithmetic mean and the logarithmic mean.

Mishra Vishnu Narayan

Title: Some approximation properties of Baskakov-Szasz-Stancu operators

Abstract. In this present paper, we estimate moments for these operators and obtain the recurrence relation for moments. Also, we study direct theorem, Voronovskaja type asymptotic formula for these operators and weighted approximation properties for these operators.

Mortici Cristinel

Title: The Hyers-Ulam stability of a functional equation with bounded solutions

Abstract. It is the scope of this work to prove that some functional equation is Hyers-Ulam stable. Our results incorporate as a particular case a recent result of S.-M. Jung stated in [Functional equation f(x)=pf(x-1)-qf(x-2) and its Hyers-Ulam stability, J. Inequal. Appl., Volume 2009, Article ID 181678, 10 pages].

Muraru Carmen Violeta, Acu Ana Maria

Title: Approximation properties of bivariate extension of q-Schurer-Kantorovich operator

Abstract. In this paper, we introduce a bivariate generalization of the Schurer Kantorovich operators based on qintegers and get

a Bohmann-Korovkin type approximation theorem of these operators. We also estimate the rate of convergence of the proposed operators, in the terms of first modulus of smoothness.

Păltănea Radu

Title: Approximation of fractional derivatives

Abstract. We study the approximation of fractional derivatives, in diverse senses by means of positive linear operators. Quantitative aspects are also considered.

Pop Emilia Loredana

Title: Connections between vector optimization problems, their solutions and saddle points

Abstract. Considering a vector optimization problem, we attach to it the first order approximated vector optimization problem. We study the connections between the efficient solutions and saddle points of these two problems.

Popa C. Emil

Title: Some inequalities for the Landau constants

Abstract. Starting with some inequalities for the Wallis ratio and the Ramanujan type formulas for the Landau constants, we obtain new estimates for this constants.

Radu Voichita Adriana

Title: Academician Professor D.D. Stancu : a life time dedicated to the numerical analysis and theory of approximation

Abstract. This spring, on April 17, the mathematical community

suffered a big loss: the decease of Academician Professor D.D. Stancu, a Romanian distinguish mathematician. He was an Emeritus member of American Mathematical Society and an Honorary member of the Romanian Academy. He was also a member of the German society Gesellschaft fur Angewandte Mathematik und Mechanik. His publication list about 160 items (papers and books) and more than 60 papers containing his name in their titles. The main contributions of research work of Professor D.D. Stancu fall into the following list of topics: Approximation of functions by means of linear and positive operators, Representation of remainders in linear approximation procedures, Probabilistic methods for construction and investigation of linear positive operators, Interpolation theory, Spline approximation, Numerical differentiation, Orthogonal polynomials, Numerical quadratures and cubatures, Taylor-type expansions, use of Interpolation and Calculus of finite differences in Probability theory and Mathematical statistics.

Rădulescu Ioana

Title: Chen invariants for Sasakian manifolds

Abstract. Chen introduced a series of Riemannian invariants on Kaehler manifolds proved invariants for Kaehler submanifolds in complex space forms.

Rusu Maria Daniela, Stănilă Elena Dorina

Title: Chebyshev-Grüss-Type Inequalities for the Bernstein-Euler-Jacobi Operators

Abstract. The classical form of Grüss' inequality gives an estimate of the difference between the integral of the product and the product of the integrals of two functions in C[a, b]. The aim of this talk is to present some Chebyshev-Grüss-type inequalities and apply them to the Bernstein-Euler-Jacobi (BEJ) operators of first and

second kind. The first and second moments of the operators will be of great interest.

Simian Dana, Simian Corina

Title: Characterization of a flexible cubic Bezier interpolation scheme

Abstract. The aim of the paper is to introduce a cubic interpolation scheme using Bezier curves which shape is controlled using two parameters. We make a geometric characterization of the interpolation curves and compare the results with the geometric characterization made by Stone and DeRose. Computation and graphic representations are made using MATLAB

Sprintu Iuliana

Title: New mathematical model for composite thin plates with different boundery conditions

Abstract. In the context of composite materials technology increasingly present in the industry, this article covers a topic of great interest with theoretical and practical importance. Given the complex design of fiber-reinforced materials and their heterogeneous nature, mathematical modeling of the mechanical response under different external stress is very difficult to address in the absence of simplifying assumptions. In most structural applications, composite structures can be idealized as beams, plates or shells. The analysis is reduced from three-dimensional elasticity problem to a one-dimensional, or two-dimensional problem, based on certain simplifying assumptions that can be made because the structure is thin. This paper aims to validate a mathematical model illustrating how thin rectangular orthotropic plates respond to the actual load. Thus, from the theory of thin plates, new analytical solutions are proposed corresponding orthotropic rectangular plates having different boundary conditions. Proposed analyti-

cal solutions are considered both for solving equation orthotropic rectangular plates and for modal analysis.

Stan Gabriel

Title: A Voronovskaya-type result for a generalized Baskakov- Durmeyer operator

Abstract. In this article we give a generalization of the Baskakov-Durmeyer operator using Kantorovich method and we prove convergence properties and a Voronovskaj- type theorem for these new operators.

Ţincu Ioan

Title: Characterization theorems of Jacobi and Laguerre polynomials

Abstract. In this paper we prove a property of the Jacobi polynomials and the Laguerre polynomials.

Vernescu Andrei

Title: Acad. Prof. D. D. Stancu, a respectful remember and a deep homage

Abstract. The presentation consists in a remembering of the life and of the work of our beloved master Acad. Prof. D.D. Stancu.

Participations to RoGer 2014

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