

Schedule

Wednes

14:00-19:00 Reception
Main Building (Victoriei B

20:00-21:00 Welcome C
Building (Victoriei Bd. No.

Thursd

Plena

09:00-09:30 Heiner Gon
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Official Op

Prof. Ph.D. Constantin Opre
Prof. Ph.D. Dumitru
Prof. Ph.D. Dumitru Acu -

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Chairm

10:00-10:20 Inna Nikolov
Polynomials of first type

10:20-10:40 Radu Paltanea, *Inequalities with second order moduli of continuity*

10:40-11:00 Coffee break

11:00-11:20 Ana Maria Acu, Mugur Acu, Arif Rafiq, *Extremal problems with polynomials*

11:20-11:40 Dana Simian, Corina Simian, *On an application of ideal interpolation*

Plenary Lecture

15:00-15:30 Gancho Tachev, *New Variants of Voronovskaja-type Theorems for Schoenberg-Spline Operator*

15:30-16:00 Coffee break

Lecture

Chairman: Heiner Gonska

16:00-16:20 Sorin G. Gal, *Voronovskaja's Theorem and the Exact Degree of Approximation for the Derivatives of Complex Riesz-Zygmund Means*

16:20-16:40 Emil C. Popa, *On an expansion theorem in finite operators calculus of G - C . Rota*

16:40-17:00 Andrei Vernescu, *Some Results in Discrete Asymptotic Analysis*

17:00-17:20 Ioan Popa, *A variant of A.Lupas inequality for Peano kernels*

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Chairman

10:00-10:20 Adrian Holk
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10:20-10:40 Eugen Dragl
tion of a polylocal problem
second kind

10:40-11:00 Eugen Const
interpolating type

11:00-11:20 Adrian Bra
Formulas with Higher Degr

11:20-11:40 Marian Ola
differential equation in a B

Excursion (wit

Saturday 31 May

Plenary Lecture

09:00-09:30 Ioan Gavrea, *A representation theorem of Lupas type for Hermite-Hadamard Functionals*

09:30-10:00 Coffee break

Lecture

Chairman: Ioan Gavrea

10:00-10:20 Mircea Ivan , *A Simple Solution to Basel Problem*

10:20-10:40 Ioana Chiorean, *Remarks on some Parallel Computations for Spline Recurrence Formulas*

10:40-11:00 Mihesan Vasile, *On A General Class of Beta Approximating Operators*

11:00-11:20 Bogdan Gavrea, *Optimization based methods for the simulation of large multi-body systems. A computational study*

Lecture

Chairman: Florin Sofonea

15:00-15:20 Dumitru Acu, *A note of Mathieu's inequality*

15:20-15:40 Mioara Boncuț, *Some Properties of Box Spline Functions*

15:40-16:00 Florin Sofor

16:00-16:20 Ioan Țincu,
provement

16:20-16:40 Nicolae Sec
parameter of Hutchinson m
Functions System with prob

Abstracts RoGer 2008

Heiner Gonska

Title: QUANTITATIVE VORONOVSKAYA-TYPE THEOREMS

Abstract. At the 2006 NAAT conference in Cluj we presented a new estimate for the Taylor remainder which has many applications in Numerical Analysis and Approximation Theory.

In our talk we will focus on just one group of applications, namely on extensions and generalizations of the classical Voronovskaya theorem for Bernstein operators. As one consequence we obtain several known quantitative Korovkin-type theorems for positive linear operators defined on $C[0,1]$.

More concrete applications will be given for the "genuine Bernstein-Durrmeyer operators" U_n , for a class of operators which bridge the gap between them and the classical Bernstein operators B_n , and for one further class of mappings linking the U_n to the Durrmeyer operators M_n .

Time permitting, we also discuss Voronovskaya-type theorems in terms of the Ditzian-Totik modulus, in simultaneous approximation, and such for the Schoenberg spline operator.

Inna Nikolova

Title: LOWERING OPERATORS FOR MULTIPLE MEIXNER POLYNOMIALS OF FIRST TYPE

Abstract. In this paper lowering operators for multiple Meixner polynomials of first type are found. There are two types of lowering operators for this polynomial set: with finite difference forward and finite difference backwards.

Sorin G. Gal

Title: VORONOVSKAJA'S THEOREM OF APPROXIMATION FOR THE DERIVATIVE MEANS

Abstract. In this paper we obtain the exact orders in approximation by the Zygmund means in compact disk

Adrian Branga

Title: A CLASS OF PARAMETRIC QUADRATURE DEGREE OF EXACTNESS

Abstract. In this paper is presented a class of parametric quadrature formulas depending on two real parameters. The formulas are for polynomials of even degree. The value of the degree is such that the corresponding quadrature is exact. Also we compute the coefficients. Also we find a representation of the remainder. The formula contains the Simpson, MacLaurin, Gauss quadrature formulas. Keyword: Peano's Theorem, Simpson formula, Gauss-Legendre formula.

Ana Maria Acu, Mu

Title: EXTREMAL PROBLEMS WITH

Abstract. Using quadrature formulas of Radau type, we give some new extremal problems for polynomials. Let $\tilde{H}^{(\alpha, \beta)}$ be the class of polynomials that

$$|p_{n-1}(x_i)| \leq |\hat{p}_n(x_i)|$$

where by $\tilde{\mathcal{P}}_n^{(\alpha,\beta)}$ we denote the n th Jacobi polynomial and the x_i are the zeroes of $\tilde{\mathcal{P}}_n^{(\alpha,\beta)}$. We give exact estimation of certain weighted L^2 -norms of the k th derivative of polynomials with there are in the class $\tilde{H}^{(\alpha,\beta)}$.

Dana Simian, Corina Simian

Title: ON AN APPLICATION OF IDEAL INTERPOLATION

Abstract. Ideal interpolation is obtained when the interpolation conditions, Λ , have the property that $\ker(\Lambda)$ is an ideal of polynomials. In case of ideal interpolation we can switch between interpolation and reduction process with respect to a H -basis of the ideal $\ker(\Lambda)$. It is proved that the interpolation space, for an ideal interpolation scheme, is the same with the space of reduced polynomial modulo a H -basis of the ideal $\ker(\Lambda)$ and the interpolation operator is the same with the reduction operator. The inner product used in the reduction process is very important. Different inner products leads to different reduced spaces of polynomials and therefore to different polynomial interpolation spaces. The aim of this paper is to prove many properties of the polynomials which belong to different polynomial interpolation spaces for ideal interpolation schemes, using the reduction process with respect to a H -basis of the ideal $\ker(\Lambda)$ and many inner products.

Mircea Ivan

Title: A SIMPLE SOLUTION TO BASEL PROBLEM

Abstract. The Basel problem is a famous problem in number theory, first posed by Pietro Mengoli in 1644, and solved by Leonhard Euler in 1735.

The Basel problem asks for the precise sum of the series $\sum_{n=1}^{\infty} n^{-2}$. We present a simple proof of Euler's formula $1 + \frac{1}{2^2} + \frac{1}{3^2} + \dots = \frac{\pi}{6}$.

Ioana Chiorean

Title: REMARKS ON SOME PARALLEL CURRENTCARRYING FORMULAS

Abstract. It is known that many problems can be solved more efficiently by using spline functions instead of finite differences. In this paper, the computational effort is, also, reduced due to the tridiagonal matrices involved. The algorithm is improved by parallel calculus. The paper presents a parallel computation approach for generating the cubic spline functions.

Bogdan Gavrea

Title: OPTIMIZATION BASED METHODS FOR MULTI-BODY SYSTEMS. A COMPARISON

Abstract. Traditional time-step integration systems are formulated as linear complementarity problems (LCPs) with copositive matrices. Such LCPs can be solved by type algorithms, and solvers such as PATH are robust. However, for large systems, the path solver is not efficient from a computational point of view. M. Anitescu in 2006 allows the reformulation of the LCP as a quadratic program (QP), for which many solvers are available. In the present work, we compare several well known QP solvers. We analyze the performance and we address the correctness of the results.

Ioan Ţincu

Title: A POOF OF SCHUR'S CONJECTURE AND AN IMPROVEMENT

Abstract. In the paper I proved first Schur's Conjecture by using the properties of Bessel's functions of the first species. The second main result is an identity verified by the product $\sin ax \sin a(1 - x)$, containing Schur's Conjecture as a particular case ($a = \frac{\pi}{2}$).

Ioan Popa

Title: A VARIANT OF A.LUPAS INEQUALITY FOR PEANO KERNELS

Abstract. In this paper we point out a companion of A.Lupas inequality for symmetric kernels and apply it for quadratures.

Ioan Gavrea

Title: A REPRESENTATION THEOREM OF LUPAS TYPE FOR HERMITE-HADAMARD FUNCTIONALS

Abstract. In 1974 A.Lupas proved a representation theorem for positive linear fuctionals in terms of divided differences.In this paper we give an extension of this theorem for Hermite-Hadamard functionals.

Gancho Tachev

Title: NEW VARIANTS OF VORONOVSKAJA-TYPE THEOREMS FOR SCHOENBERG-SPLINE OPERATOR

Abstract. We represent new quantitative variants of Voronovskaja's Theorem, based on new Estimates for the second moment of Schoenberg Operator. Some conjectures are formulated.

Andrei Vernescu

Title: SOME RESULTS IN DISCRETE

Abstract. In this work we present some new estimations of the convergence of

Eugen Draghici, Daniela

Title: APPROXIMATION OF SOLUTIONS OF
CHEBYSHEV - POLYNOMIALS OF

Abstract. Consider the problem

$$\begin{cases} -y''(x) + q(x)y(x) = f(x) \\ y(c) = \alpha \\ y(d) = \beta, \quad c, d \in [a, b] \end{cases}$$

The aim of this paper is to solve this problem based on Pseudospectral method using Chebyshev collocation method at interpolation nodes. Using orthogonal polynomials implementation, we obtain an algorithm and give examples.

Radu Paltanea

Title: INEQUALITIES WITH SECOND

Abstract. We study some new types of continuity for positive linear operators and constants which appear in these

Emil C. Popa

Title: ON AN EXPANSION THEOREM IN FINITE OPERATORS CALCULUS OF G-C. ROTA

Abstract. Using so called Viskov method we present here the expansions theorems of the umbral calculus.

Florin Sofonea

Title: ON A LINEAR AND POSITIVE OPERATORS

Abstract. In order to approximate function $f : [0, \infty) \rightarrow \mathbb{R}$, with $|f(x)| \leq Mx^\alpha$ for $x > 0$ and $M = M(f) > 0$, we introduce the approximation operators $\mathcal{F}_n : f \rightarrow \mathcal{F}_n f$, with

$$(\mathcal{F}_n f)(x) = \frac{(nx)_{n+1}}{n!} \int_0^1 t^{nx-1} (1-t)^n f\left(\frac{t}{1-t}\right) dt, \quad x > 0, \quad \alpha > 0.$$

where $n \geq n_0$ with $n_0 = [\alpha] + b + 1$ and $n \in \mathbb{N}^*$ - be fixed.

Our aim is to find some properties for the above operator.

Adrian Holhos

Title: QUANTITATIVE ESTIMATES FOR POSITIVE LINEAR OPERATORS IN WEIGHTED SPACES

Abstract. We give some quantitative estimates for positive linear operators in weighted spaces by introducing a new modulus of continuity and then apply these results to the Bernstein-Chlodowsky polynomials.

Vasile Mihesan

Title: ON A GENERAL CLASS OF BETA APPROXIMATING OPERATORS

Abstract. By using the generalization of a general class of Beta operators, which includes the classical kind (see [5],[6],[9],[10]). We obtain a special case of this Beta operator.

Dumitru Acu

Title: A NOTE ON MATHIEU'S OPERATORS

Abstract. In this note we obtain

Eugen Constantinescu

Title: A QUADRATURE FORMULA

Abstract. In the paper we give a formula of the form: $\int_a^b w(x)f(x)dx \approx \int_a^b u(x)f(x)dx$

A. Lupaş, where

$(L_{n-1}f)(x) := L_{n-1}(E; f(x))$ is the

best approximation for the function f in the

space F i.e:

$S(f; L_{n-1}f) =$

Mioara Boncuţ

Title: SOME PROPERTIES OF B-SPLINE FUNCTIONS

Abstract. The work has two parts: the first part

with some box-spline properties and the second part

in $a\Lambda$ and the variable x in x/a , a linear

transform applied to box-spline functions.

formation.

Nicolae Secelean

Title: THE CONTINUITY WITH RESPECT TO A PARAMETER OF HUTCHINSON MEASURE ASSOCIATED OF AN COUNTABLE ITERATED FUNCTIONS SYSTEM WITH PROBABILITIES

Abstract. The continuity with respect to a parameter of Hutchinson measure associated of an countable Iterated Functions System with probabilities.

Marian Olaru

Title: DATA DEPENDENCE FOR SOME FUNCTIONAL DIFFERENTIAL EQUATION IN A BANACH SPACE

Abstract. In this paper we study data dependence for the following integral equation:

$$u(x) = h(x, u(0)) + \int_0^{x_1} \cdots \int_0^{x_m} K(x, s, u(\theta_1 s_1, \cdots, \theta_m s_m)) ds,$$

$$x \in \prod_{i=1}^m [0, b_i], \theta_i \in (0, 1), (\forall) i = \overline{1, m}$$

by using c-WPOs .

Participati

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