

# Schedule ICATA 2019

**Location:**

**Imparatul Romanilor Hotel**  
Bvd. Nicolae Balcescu, No. 4, Sibiu

## Thursday 10 October

**08:00-10:00 Registration**

**10:00-10:30 Opening Ceremony**

**Speech:**

**Assoc. Prof. Dr. Florin Sofonea** - Organizer of ICATA 2019

**Prof. Dr. Ing. Claudiu Kifor** - Vice Rector of Lucian Blaga  
University of Sibiu

**Assoc. Prof. Dr. Angela Bănăduc** - Dean of Faculty of Sci-  
ences

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

## Plenary Lecture

**Chairman: Harun Karsli**

**10:30-11:00 Ioan Raşa**, *Composition of Positive Linear Operators*

**11:00-11:20 Coffee break**

## Lecture

**Chairman: Harun Karsli**

**11:20-11:40 Michal Kozdeba**, *Uniqueness of minimal projections in  
smooth three-dimensional matrix spaces*

**11:40-12:00** Dorian Popa, *On Ulam stability of the linear differential operator*

**12:00-12:20** Alina Ramona Băiaş, *Approximate solutions of some linear difference equations and Ulam stability*

**12:20-12:40** Daniela Marian, *Hyers-Ulam stability of a general linear partial differential equation*

**12:40-13:00** Diana Otrocol, *Ulam stability of a linear difference equation in locally convex spaces*

**13:00-13:20** Razzaghmaneshi Behname, *The Classification of Permutation Groups with Maximum Orbits*

**13:20-13:40** Nesibe Manav, *On approximation of bivariate genuine-type operators based on Lupaş functions*

## Lecture

**Chairman: Radu Păltănea**

**15:00-15:20** George Anastassiou, *On my life and work*

**15:20-15:40** Calin-Ioan Gheorghiu, *On the utility of non-classical orthogonal polynomials. Boundary value and eigenvalue problems*

**15:40-16:00** Marius-Mihai Birou, *New positive linear operators which preserve some functions*

**16:00-16:20** Dan Miclăuş, *The classical Bernstein polynomial involved in a root finding method*

**16:20-16:40** Coffee break

**Chairman: Gancho Tachev**

**16:40-17:00** Ana Maria Acu, Mădălina Dancs, Voichiţa Adriana Radu, *Representations for the inverses of certain operators*

**17:00-17:20** Carmen Muraru, Ogun Dogru, Aslihan Gulsun, *A-statistical  $L_p$  approximation properties of an integral variant of a general positive linear operators*

**17:20-17:40** Vlad Ciobotariu-Boer, *New Integral Inequalities of Perturbed Trapezoidal Type for MT-Convex Functions via Classical Integrals and Fractional Integrals*

**17:40-18:00** Nicușor Minculete, *Inequalities in an 2-inner product space*

**18:00-18:20** Waseem Alshanti, *Inequality of Ostrowski Type for Mappings with Bounded Fourth Order Partial Derivatives*

**18:20-18:40** Mohd Ahasan, *Generalized Szász-Mirakjan type operators via  $q$ -calculus and approximation properties*

**19:00-22:00** **Welcome Cocktail (Imparatul Romanilor Hotel)**

## Friday 11 October

### Plenary Lecture

Chairman: Ioan Rașu

**09:10-09:40** Harun Karsli, *Some new results on Urysohn type operators*

### Lecture

Chairman: Ioan Rașu

**09:40-10:00** Radu Păltănea, *On the strong converse inequality for Bernstein operators and convex functions*

**10:00-10:20** Madalina Dancs, Alexandra-Ioana Maduta, *Entropies for some continuous distributions of probabilities*

**10:20-10:40 Liliana Guran, *On some new multivalued results in the metric spaces of Perov's type***

**10:40-11:00 Coffee break**

**Chairman: Dorian Popa**

**11:00-11:20 Radu Miculescu, *Iterated multifunction systems and Nadler's fixed point theorem***

**11:20-11:40 Augusta Rațiu, *Constraint method for vector optimization problems***

**11:40-12:00 Emil C. Popa, *A note on Jordan's inequality***

**12:00-12:20 Adrian Girjoaba, *Kepler like equation, number of solutions***

**12:20-12:40 Alina Baboș, *Some classes of surfaces generated by blending interpolation***

**12:40-13:00 Nadeem Rao, *Szasz-Durrmeyer operators based on Dunkl analogue***

**13:00-13:20 Pratap Ram, *The family of Szász-Durrmeyer type operators Involving Charlier Polynomials***

## Plenary Lecture

**Chairman: George Anastassiou**

**15:10-15:40 Gancho Tachev, *On some modified Post-Widder Operators***

## Lecture

**Chairman: George Anastassiou**

**15:40-16:00** Octavian Agratini, Harun Karsli, *Non-Newtonian Calculus and Approximation Theory*

**16:00-16:20** Alexandru-Mihai Bica, *Improved error estimate for complete quartic splines and applications*

**16:20-16:40** Camelia Liliana Moldovan, Radu Păltănea, *The exact form of the second moment of third degree Schoenberg spline operators*

**16:40-17:00** Coffee break

**Chairman: Octavian Agratini**

**17:00-17:20** Emilia Loredana Pop, *Calculus of the derivatives from the mean value theorem*

**17:20-17:40** Ioan Tincu, Florin Sofonea, *On an inequality for Legendre polynomials*

**17:40-18:00** Dana Simian, *On an Approach to Perform Semantic Search in a Full-Text Articles Data Base*

**18:00-18:20** Aristidis Tsiolikas, Ana Maria Acu, Foteini Vakoutsis, and John Kechagias, *Plasma arc cutting process optimization using soft computing and NN modeling*

**19:00-22:00** Official Dinner (Imparatul Romanilor Hotel)

## Saturday 12 October

**09:30-13:30** Visiting Astra Museum of Traditional Folk Civilization (Departure from Sala Thalia, Cetății str., no. 3-5)

**14:00-15:30** Lunch

# Abstracts ICATA 2019

## Acu Ana Maria, Raşa Ioan

**Title:** COMPOSITION OF POSITIVE LINEAR OPERATORS

**Abstract.** This is a continuation of the series of six papers "On the composition and decomposition of positive linear operators I-VI", initiated by Heiner Gonska. One motivation for that work was an attempt to decompose the classical Bernstein operator  $B_n$  into simpler blocks. In their unpublished manuscript "Wir schlagen Bernstein kaputt!" (2006), A. Lupas and H. Gonska introduced the operator  $\mathbb{G}_n := \overline{\mathbb{B}}_n \circ S_{\Delta_n}$ , which is in fact different from  $B_n$ , but not far from it. We survey some facts in this direction and add some new results by studying the eigenstructures of  $B_n$ ,  $\mathbb{G}_n$ , and  $\mathbb{A}_n := S_{\Delta_n} \circ \overline{\mathbb{B}}_n$ .

## Acu Ana Maria, Dancs Mădălina, Radu Voichița Adriana

**Title:** REPRESENTATIONS FOR THE INVERSES OF CERTAIN OPERATORS

**Abstract.** Very recently, Nasaireh and Raşa [1] obtained some Voronovskaya type formulas for operators which are nonpositive. These results were used in order to obtain asymptotic formulas for inverse of some known operators as Beta operators  $\mathbb{B}_n$ , Bernstein operators  $B_n$ , the composition  $F_n = \mathbb{B}_n^{-1} \circ B_n$ . Later, these results were extended for a more general case by Heilmann, Nasaireh and Raşa [2]. Following the direction initiated by the mentioned authors, in the present paper are given some Voronovskaja type theorems for the inverses of certain operators.

### References

- [1] F. Nasaireh, I. Raşa, *Another Look at Voronovskaja Type Formulas*, Journal of Mathematical Inequalities, 12(1) (2018), 95-105.
- [2] M. Heilmann, F. Nasaireh, I. Raşa, *Beta and related operators revisited*, Proceedings of Constructive Theory of Functions, Sozopol 2016 (K. Ivanov, G. Nikolov and R. Uluchev, Eds.), pp. 175-185. Prof. Marin Drinov Academic Publishing House, Sofia, 2018, 175-185.

## **Agratini Octavian, Karsli Harun**

**Title:** NON-NEWTONIAN CALCULUS AND APPROXIMATION THEORY

**Abstract.** Our aim is to bring multiplicative calculus to the attention of researchers working in the field of positive approximation processes. Starting from a linear positive Markov process of discrete type, we modify it using this type of calculus. Within this approach, a convergence property and an upper bound of the error of approximation are established. At the end, a particular case concerning the classical Bernstein operators is presented.

## **Ahasan Mohd**

**Title:** GENERALIZED SZÁSZ-MIRAKJAN TYPE OPERATORS VIA Q-CALCULUS AND APPROXIMATION PROPERTIES

**Abstract.** The aim of this paper is to construct q-analogue of generalized Szász-Mirakjan type operators whose construction depend on a real valued function  $\rho$ . We prove that the new operators provide better weighted uniform approximation over  $[0, \infty)$ . In terms of weighted moduli of smoothness, we obtain degrees of approximation associated with the function  $\rho$ . Also a Voronovskaya type result is obtained. Finally, we give some graphical examples for these operators and show that the new operators are more flexible in view of rate of convergence to the function  $f$  which depends on the selection of  $\rho$ ,  $u_{n,q}$  and  $v_{n,q}$ .

## **Alshanti Waseem**

**Title:** INEQUALITY OF OSTROWSKI TYPE FOR MAPPINGS WITH BOUNDED FOURTH ORDER PARTIAL DERIVATIVES

**Abstract.** A general Ostrowski's type inequality for double integrals is given. We utilize function whose partial derivative of order four exists and is bounded.

## Anastassiou George

**Title:** ON MY LIFE AND WORK

**Abstract.** Celebrating George Anastassiou 500 research publications reviewed and indexed at AMS/MathScinet and Zentralblatt and counting, a usually unsurpassed record internationally!

## Baboş Alina

**Title:** SOME CLASSES OF SURFACES GENERATED BY BLENDING INTERPOLATION

**Abstract.** We construct some classes of surfaces which satisfy some given conditions, using some interpolation operators defined on a triangle with one curved side.

## Băiaş Alina Ramona

**Title:** APPROXIMATE SOLUTIONS OF SOME LINEAR DIFFERENCE EQUATIONS AND ULAM STABILITY

**Abstract.** We give some results on approximate solutions and Ulam stability for linear difference equations in Banach spaces. Moreover, we obtain sharp estimates of the Ulam constant and the best Ulam constant in some particular cases.

## Behname Razzaghmaneshi

**Title:** THE CLASSIFICATION OF PERMUTATION GROUPS WITH MAXIMUM ORBITS

**Abstract.** Let  $G$  be a permutation group on a set  $\Omega$  with no fixed points in  $\Omega$  and let  $m$  be a positive integer. If no element of  $G$  moves any subset of  $\Omega$  by more than  $m$  points (that is, if  $|\Gamma^g \setminus \Gamma| \leq m$  for every  $\Gamma \subset \Omega$  and  $g \in G$ ), and the lengths one of orbits is  $p$ , and the rest of orbits have lengths equal to 3. Then the number  $t$  of  $G$ -orbits in  $\Omega$  is at most  $\frac{3}{2}(m-1) + \frac{1}{p}$ . Moreover, we classify all groups for  $t = \frac{3}{2}(m-1) + \frac{1}{p}$  is hold.

## **Bica Alexandru-Mihai**

**Title:** IMPROVED ERROR ESTIMATE FOR COMPLETE QUARTIC SPLINES AND APPLICATIONS

**Abstract.** Concerning the Hermite type complete quartic spline with deficiency 2, we improve the interpolation error estimate stated in J. Approx. Theory 58 (1989) 58-67 in terms of the modulus of continuity and in the case of Lipschitzian functions. The estimate is extended by the first half part of the grid subintervals to the whole interval. Some applications of the associated corrected Simpson quadrature rule are presented including an efficient numerical method for the clamped beam fourth order differential equation.

## **Birou Marius-Mihai**

**Title:** NEW POSITIVE LINEAR OPERATORS WHICH PRESERVE SOME FUNCTIONS

**Abstract.** In this article we construct and study some positive linear operators which fix the constant functions and another function having certain properties.

## **Ciobotariu-Boer Vlad**

**Title:** NEW INTEGRAL INEQUALITIES OF PERTURBED TRAPEZOIDAL TYPE FOR MT-CONVEX FUNCTIONS VIA CLASSICAL INTEGRALS AND FRACTIONAL INTEGRALS

**Abstract.** In this paper we establish some new general integral inequalities for twice differentiable functions of which second derivatives in modulus are MT-convex via classical integrals and Riemann-Liouville integrals, respectively.

## Dancs Madalina, Maduta Alexandra-Ioana

**Title:** ENTROPIES FOR SOME CONTINUOUS DISTRIBUTIONS OF PROBABILITIES

**Abstract.** We consider classical entropies associated with several continuous distributions of probabilities. Explicit expressions and properties of them are presented.

## Gheorghiu Calin-Ioan

**Title:** ON THE UTILITY OF NON-CLASSICAL ORTHOGONAL POLYNOMIALS. BOUNDARY VALUE AND EIGENVALUE PROBLEMS

**Abstract.** In this talk we are concerned with non-classical orthogonal polynomials as basis functions in solving, mainly, boundary value and eigenvalue problems on unbounded intervals. We analyse spectral collocation methods based on these polynomials. Some benchmark problems are considered. The usefulness of these polynomials is compared with that of classical ones, i.e., Hermite, Lagrange and mapped Chebyshev as well as with that of sinc functions.

## Girjoaba Adrian

**Title:** KEPLER LIKE EQUATION, NUMBER OF SOLUTIONS

**Abstract.** We give a closed form solution for the number of solutions of the equation  $x - a \sin(x) = b$  with  $a > 1$  and  $b > 0$ . An asymptotic study of the (double) sequence of the number of solutions, when  $a$  and  $b$  are (integer) multiples of  $\pi$ , is realized. As a sanitary check, a MAPLE procedure is used together with Wolfram Alpha soft.

## Guran Liliana

**Title:** ON SOME NEW MULTIVALUED RESULTS IN THE METRIC SPACES OF PEROV'S TYPE

**Abstract.** The purpose of this paper is to present some new fixed point results

in the generalized metric spaces of Perov's sense under a contractive condition of Hardy-Rogers type. The data dependence of the fixed point set, the well-posedness of the fixed point problem, as well as, the Ulam-Hyers stability are also studied.

## Karsli Harun

**Title:** SOME NEW RESULTS ON URYSOHN TYPE OPERATORS

**Abstract.** In the present work, which is a continuation of recent studies of the author, we focus our attention on the generalization and extension of representing or reconstruction of functions (or signals) to operators by means of Urysohn type operators. Since the Urysohn-type operators contains some well-known integral operators, which frequently used to solve many problems in engineering, physics and approximation problems, this type of operators are very useful and important for different sciences and hence it need deep investigation.

In particular, we give some characterization of newly introduced Urysohn type operators constructed by using the Urysohn type operator values instead of the rational sampling values of the function (or signal). This way, in some cases the new operators are more flexible than the classical ones and we will investigate some convergence problems for them.

### References

- [1] Altomare, F. and Campiti, M. (1994), *Korovkin-Type Approximation Theory and its Applications*, De Gruyter Studies in Mathematics, 17, Walter de Gruyter and Co., Berlin.
- [2] Bardaro, C., Mantellini, I., *On the reconstruction of functions by means of nonlinear discrete operators*, J. Concr. Appl. Math. 1 (2003), no. 4, 273-285.
- [3] Bardaro, C., Mantellini, I., *On approximation properties of Urysohn integral operators*, Int. J. Pure Appl. Math., 3(2), 129-148 (2002)
- [4] Bardaro, C., Musielak, J., Vinti, G., *Nonlinear Integral Operators and Applications*, De Gruyter Series in Nonlinear Analysis and Applications, Vol. 9, xii + 201 pp., 2003.
- [5] Bardaro, C., Karsli, H. and Vinti, G., *Nonlinear integral operators with homogeneous kernels: pointwise approximation theorems*, Applicable Analysis,

Vol. 90, Nos. 3-4, March-April (2011), 463-474.

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[7] Butzer, P. L., Nessel, R. J., *Fourier Analysis and Approximation*, Pure Appl. Math., 40, Academic Press, New York, London, 1971

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[9] Demkiv, I. I., *On Approximation of the Urysohn operator by Bernstein type operator polynomials*, Visn. L'viv. Univ., Ser. Prykl. Mat. Inform., Issue 2, (2000), 26 - 30.

[10] Karsli, H., *Approximation by Urysohn type Meyer-König and Zeller operators to Urysohn integral operators*, Results Math. 72 (2017), no. 3, 1571–1583.

[11] Karsli, H., *Approximation results for Urysohn type nonlinear Bernstein operators*, Advances in Summability and Approximation Theory, Book Chapter, Springer-Verlag, (2018).

[12] Karsli, H., *Approximation Results for Urysohn Type Two Dimensional Nonlinear Bernstein Operators*, Const. Math. Anal., 1 (2018), No. 1, pp. 45-57.

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[15] Makarov, V. L. and Khlobystov, V. V., *Interpolation method for the solution of identification problems for a functional system described by the Urysohn operator*, (in Russian) Dokl. Akad. Nauk SSSR, 300(6), (1988), 1332 - 1336.

[16] Makarov, V. L. and Demkiv, I. I., *Approximation of the Urysohn operator by operator polynomials of Stancu type*, Ukrainian Math Journal, 64(3), (2012), 356 - 386.

## Kozdeba Michal

**Title:** UNIQUENESS OF MINIMAL PROJECTIONS IN SMOOTH THREE-DIMENSIONAL MATRIX SPACES

**Abstract.** Let  $S = (M(n, m, r), \|\cdot\|)$  be a three-dimensional matrix space with real or complex values with a smooth norm  $\|\cdot\|$ . We show that there is exactly one minimal projection from  $S$  into a certain subspace  $T$  and then generalize this result to the corresponding spaces of the  $n$ -dimensional matrices.

## Manav Nesibe

**Title:** ON APPROXIMATION OF BIVARIATE GENUINE-TYPE OPERATORS BASED ON LUPAŞ FUNCTIONS

**Abstract.** The purpose of this study is to extend the study of Lupaş based operators introduced by Lupaş (1995). In our study we consider a bivariate generalization of the operators defined by Agratini (1999). We give some approximation properties, including local approximation, error estimation in terms of modulus of continuity, and some results. Finally, we give some visual examples about the convergence of our operators to  $f(x)$ .

## Marian Daniela

**Title:** HYERS-ULAM STABILITY OF A GENERAL LINEAR PARTIAL DIFFERENTIAL EQUATION

**Abstract.** In this paper we will study Hyers-Ulam stability for a general linear partial differential equation of first order in Banach space.

## Miclăuş Dan

**Title:** THE CLASSICAL BERNSTEIN POLYNOMIAL INVOLVED IN A ROOT FINDING METHOD

**Abstract.** One of the most important problem in all the history of mathematics was to solve the nonlinear equation  $f(x) = 0$ . We can not find always an accurate solution of this equation, but applying a root finding method we

can get some good approximations. In this talk we focus on a root finding method which has as start point the classical Bernstein polynomial.

## Miculescu Radu

**Title:** ITERATED MULTIFUNCTION SYSTEMS AND NADLER'S FIXED POINT THEOREM

**Abstract.** We present a Nadler type result for iterated multifunction systems which represents a generalization of famous Nadler's fixed point theorem.

## Minculete Nicușor

**Title:** INEQUALITIES IN AN 2-INNER PRODUCT SPACE

**Abstract.** The aim of this article is to prove new results related to several inequalities in an 2 - inner product space. Among these inequalities we will mention the Cauchy-Schwarz inequality and an inequality of Ostrowski type.

## Moldovan Camelia Liliana, Păltănea Radu

**Title:** THE EXACT FORM OF THE SECOND MOMENT OF THIRD DEGREE SCHOENBERG SPLINE OPERATORS

**Abstract.** The paper presents an explicit form for the second moment of third degree Schoenberg operators, with arbitrary knots. In particular, the case of equidistant knots is considered and estimates of approximation using moduli of continuity are obtained.

## Muraru (Popescu) Carmen, Dogru Ogun, Gul-sun Aslihan

**Title:** A-STATISTICAL  $L_p$  APPROXIMATION PROPERTIES OF AN INTEGRAL VARIANT OF A GENERAL POSITIVE LINEAR OPERATORS

**Abstract.** The present paper deals with the A-statistical approximation processes of the general class of integral type linear positive operators including many well-known operators in the  $L_p$ - metric spaces.

## Otrocol Diana

**Title:** ULAM STABILITY OF A LINEAR DIFFERENCE EQUATION IN LOCALLY CONVEX SPACES

**Abstract.** We obtain a characterization of Ulam stability for a linear difference equation with constant coefficients in locally convex spaces. Moreover for the first order linear difference equation we determine the best Ulam constant.

## Păltănea Radu

**Title:** ON THE STRONG CONVERSE INEQUALITY FOR BERNSTEIN OPERATORS AND CONVEX FUNCTIONS

**Abstract.** We obtain an estimate of the lower constant for Bernstein operators when they are applied to a convex function.

## Pop Emilia Loredana

**Title:** CALCULUS OF THE DERIVATIVES FROM THE MEAN VALUE THEOREM

**Abstract.** For two continuous functions, we study under which circumstances, the intermediate point function is differentiable of order one, two, three and four. Then, we compute the corresponding derivatives and give useful results.

## Popa Dorian

**Title:** ON ULAM STABILITY OF THE LINEAR DIFFERENTIAL OPERATOR

**Abstract.** We give some results on Ulam stability for the linear differential operator with constant coefficients acting in Banach spaces. Moreover, we obtain the best Ulam constant for the linear differential operator of the second order. In this way we improve and complement some recent results on this topic.

## Popa C. Emil

**Title:** A NOTE ON JORDAN'S INEQUALITY

**Abstract.** We present some upper and lower bounds for the functions  $\frac{\sin(x)}{x}$ . This bounds are polynomials of degree  $2n - 1$  where  $n$  is any nonnegative integer.

## Ram Pratap

**Title:** THE FAMILY OF SZÁSZ-DURRMEYER TYPE OPERATORS INVOLVING CHARLIER POLYNOMIALS

**Abstract.** In this article, we consider Szász-Durrmeyer type operators based on Charlier polynomials associated with an integral part of Srivastava-Gupta operators. For such operators, we discuss some local and global approximation results by using the first and second-order modulus of continuity, Lipschitz-type space, Ditzian-Totik modulus of smoothness, Voronovskaya asymptotic formula, and weighted modulus of continuity.

## Rao Nadeem

**Title:** SZASZ-DURRMEYER OPERATORS BASED ON DUNKL ANALOGUE

**Abstract.** In this article, we construct Szász Durrmeyer type operators based on Dunkl analogue. We investigate several approximation results by these positive linear sequences, e.g. rate of convergence by means of classical modulus of continuity, uniform approximation using Korovkin type theorem on compact interval. Further, we discuss local approximations in terms of second order modulus of continuity, Peetre's K-functional, Lipschitz type class and  $r$ th order Lipschitz-type maximal function. Weighted approximation and statistical approximation results are discussed in the last of this article.

## Rațiu Augusta

**Title:** CONSTRAINT METHOD FOR VECTOR OPTIMIZATION PROBLEMS

**Abstract.** In this paper, we consider a vector optimization problem. To obtain information about the efficient solutions of this problem we use constraint

method. Some graphical representations are given to illustrate the efficient values.

## Simian Dana

**Title:** ON AN APPROACH TO PERFORM SEMANTIC SEARCH IN A FULL-TEXT ARTICLES DATA BASE

**Abstract.** This article proposes a solution for natural language semantic searching in a full-text articles or books database, in a process similar to fingerprinting. The proposed solution exploits the sparse distributed representation of the information in human's brain. Using a large text corpus of articles or books, we train a neural network in order to produce a vector space of several hundred dimensions, with each unique word in the corpus being assigned a corresponding vector in the space. The word vectors are then mapped to sparse matrices. A sparse matrix corresponding to a search phrase is obtained by adding the sparse matrices associated to each word in the phrase. Based on the proposed solution, we present a proof of concept software system that allows natural language semantic searching in a full-text article/book database. The proposed approach for semantic search does not need labeled data and could be used across languages.

## Tachev Gancho

**Title:** ON SOME MODIFIED POST- WIDDER OPERATORS

**Abstract.** In the present paper, we consider Post-Widder operators and its modified form which preserve the test function  $x^r$ . We estimate direct results in terms of modulus of continuity for the modified operators. Also, some estimates for polynomially bounded functions and linear combinations are considered. The talk is based on joint research with prof. Vijay Gupta.

## **Țincu Ioan, Sofonea Florin**

**Title:** ON AN INEQUALITY FOR LEGENDRE POLYNOMIALS

**Abstract.** We know that the Legendre polynomials  $P_n(x)$ , satisfy the inequality  $1 - P_n(x) > 0$  for every  $x$  from  $[-1, 1]$ . In this paper we determine two polynomials, expressed using the Chebyshev polynomials of the first and second kind, which verify:  $\alpha_n(x) < 1 - P_n(x) < \beta_n(x)$  for every  $n$  and  $x$  in  $[-1, 1]$ .

## **Tsiolikas Aristidis, Acu Ana Maria, Vakoutsis Foteini, and Kechagias John**

**Title:** PLASMA ARC CUTTING PROCESS OPTMIZATION USING SOFT COMPUTING AND NN MODELING

**Abstract.** In this work experimental data were used to train a feed forward back propagation neural network (FFBP-NN) in order to predict the quality indicators of the plasma arc cutting (PAC) process. Nine (9) different neural networks were developed and tested according to Taguchi orthogonal array. Analysis of means (ANOM) and the analysis of variances (ANOVA) were utilized to optimize the parameter settings of the NN model for better prediction performance.

## Participations to ICATA 2019

No. Crt	Name/ e-mail	Affiliation
1	<b>Acu Ana Maria</b> anamaria.acu@ulbsibiu.ro	Lucian Blaga University of Sibiu, Romania
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