VALAHIA UNIVERSITY OF TÂRGOVIŞTE
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ACADEMY OF ROMANIAN SCIENTISTS
Târgovişte Branch

THE TWELFTH CONFERENCE
ON NONLINEAR ANALYSIS AND APPLIED MATHEMATICS

June, 13th -14th, 2014

Sections:

- **Mathematical Analysis and Nonlinear Analysis**
- **Differential Equations and Applied Mathematics**
- **(NEW) Convex Functions and Inequalities**
- **Didactics of Mathematics**

Scientific Committee: Grzegorz Karch (University of Wroclaw), **Dan Tiba** (Simion Stoilow Institute of Mathematics), **Silviu Sburlan** (Constanţa), **Vasile Berinde** (Technical University of Cluj-Napoca), **Constantin P. Niculescu** (University of Craiova), **Adrian Carabineanu** (University of Bucharest), **Miron Oprea** (University of Ploieşti), **Mircea Lupu** (University Transylvania of Braşov), **Cristinel Mortici** (Valahia University of Târgovişte), **Constantin Ghiţă** (Valahia University of Târgovişte), **Andrei Vernescu** (Valahia University of Târgovişte), **Dinu Teodorescu** (Valahia University of Târgovişte)

All papers subjected to a review process will be published in Journal of Science and Arts (covered by ZentralBlatt für Mathematik)

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Valahia University of Târgovişte Organizing Committee:

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- ➢ **Dumitru Fanache**
- ➢ **Constantin Ghiță**
- ➢ **Emil Lungu**
- ➢ **Doina Mihai**
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- ➢ **Alin Pohoată**
- ➢ **Dinu Teodorescu**
- ➢ **Marina Toma**
- ➢ **Georgiana Velicu**

CONFERENCE PROGRAMME

Friday 13.06.2014

13:30-14:00 OPENNING CEREMONY
14:00-15:00 PLENARY LECTURES
15:00-17:00 TALKS
17:00-17:30 BREAK
17:30-19:30 TALKS
20:00 OFFICIAL DINNER

Saturday 14.06.2014

9:00-10:00 WORKSHOP ON CONVEX FUNCTIONS AND INEQUALITIES
10:00-10:20 BREAK
10:20-12:20 WORKSHOP ON CONVEX FUNCTIONS AND INEQUALITIES

List of Participants (Alphabetical Order):

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FIXED POINT THEOREMS FOR HARDY ROGERS TYPE ON METRIC SPACES WITH SYMMETRIC GRAPH

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Abstract: Let (X; d) be a metric space endowed with a graph G such that the set V (G) of vertices of G coincides with X. We define the notion of G-Hardy-Rogers contractive type maps and obtain a fixed point theorem for such mappings. This extends and subsumes many recent results which were obtained for mappings on metric spaces endowed with a graph and for cyclic operators.

STABILIZING CHAOTIC DYNAMICAL SYSTEMS THROUGH FIXED POINT ITERATIVE METHODS

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Abstract: One of the topics related to chaotic dynamical systems has been the development of techniques for the control of chaotic phenomena. Some of the basic methods of controlling chaos are summarized in Lynch [8], where a selection of various applications of chaos control in the real world are listed, see also Ditto et al. [4] and Chu [3]. Stabilizing unstable dynamical systems through feedback adjustment methods have dominated the recent research in the field of chaos control, see Huang [6] and references therein. This method has been shown theoretically and by numerical simulations to be effective in stabilizing unstable periodic points of chaotic discrete systems.

In this paper, a simple growth-rate type mechanism for controlling chaos in discrete systems, similar to that in Huang [7] but originating in iterative approximation of fixed points [1], is developed. We show in theory and by numerical simulations that our technique of stabilizing unstable periodic points of chaotic discrete systems is effective and, moreover, compared to other stabilizing methods, has an extremely high speed. The main idea of the new method is inspired from recent and classical methods in the iterative approximation of fixed points, see Berinde [1].

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A GEOMETRIC INEQUALITY OF THE GENERALIZED ERDOS - MORDELL TYPE

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Abstract: In the present paper we solve an interesting geometric inequality problem relating to two points in triangle.

THE STUDY OF THE POTENTIAL FLOW PAST A SUBMERGED HYDROFOIL BY THE COMPLEX BOUNDARY ELEMENTS METHOD

ADRIAN CARABINEANU

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Abstract: We study the free-boundary linearized problem of the two-dimensional steady potential flow past a submerged hydrofoil. The integral representation obtained herein for the complex velocity involves only finite contours. The corresponding integral equation may be solved for any streamlined hydrofoil by means of the complex boundary element method. We calculate the free surface elevation, the velocity field, the pressure coefficients, the lift and the drag for the Karman-Trefftz and Joukowsky hydrofoils and for the circular obstacle. A comparison between some numerical and analytical results shows a very good agreement.

MARKOV CHAINS APPLIED FOR PHYSICAL AND MECHANICAL ALLIED STEEL LABORATORY TRIALS

ALINA CONSTANTINESCU, NICOLAE POPESCU

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Abstract: Our research intends to apply the stochastic processes theory in modelling of the high allied steel laboratory trials. How long the physics and mechanics allied steel tests are aleatory processes that depend on the time parameter is appropriate to design an absorbent Markov chain which can describes the stages by whom the process passes with time passing.

APPROXIMATIONS OF THE CLASSICAL AND GENERALIZED EULER-MASCHERONI CONSTANT

GABRIEL VALENTIN CRISTEA

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Abstract: We give a review and an example on some latter results on the problem of approximating the Euler-Mascheroni constant. Using the method firstly introduced in [C.Mortici, Product Approximations via Asymptotic Integration Amer. Math. Monthly 117 (5) (2010) 434-441], we get an interesting approximation about the classical Euler-Mascheroni constant.

RAMANUJAN APPROXIMATIONS FOR GAMMA FUNCTION

SORINEL DUMITRESCU

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Abstract: The aim of this paper is to discuss Ramanujan formula and related formulas for approximating the gamma function and to improve these formulas.

USING GRAPHS COLORING IN DIFFERENT FIELDS OF APPLICATIONS

DUMITRU FANACHE

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Abstract: Graph coloring is one of the most important concepts of graph theory and is used in many real-time applications. This work was mainly focused on important applications such as timetabling problem, map coloring and GSM mobile phone networks, aircraft scheduling, bi-processor task.

GENERALIZATIONS OF FINK'S INEQUALITY

AURELIA FLOREA

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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.

CONSIDERATIONS ON THE CONFIGURATION OF ANISOTROPIC SOLID

CONSTANTIN GHIŢĂ

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Abstract: In this article we do some calculations of the configuration of an anisotropic solid and we also present some applications in industry.

PRESERVATION OF LIPSCHITZ CONSTANTS BY LINEAR POSITIVE OPERATORS

ANTONIO- JESÚS LÓPEZ-MORENO, JOSÉ-MANUEL LATORRE-PALACIOS

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Abstract: We present several results on preservation of Lipschitz constants by shape preserving linear positive operators and their derivatives. We study the univariate setting for classical Lipschitz constants of higher order considering also the case of weighted approximation. We also show some results for multivariate approximation.

THE ABSOLUTE STABILIZATION AND THE OPTIMAL CONTROL OF NONLINEAR DYNAMICAL SYSTEMS FOR SPECIAL CASES. FLIGHT CONTROL SYSTEMS IN THE CASE OF ROLLING OSCILLATIONS

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Abstract: In the first part of this paper it is presented the automatic regulation methods for the absolute stability (a.r.a.s) of the nonlinear dynamical systems that have applications on the stabilization of the rolling oscillations curse for aircraft or rackets. Two methods for the absolute stability are specified: a) the A.I. Lurie method with the effective determination of the Liapunov function; b) the frequency method of the Romanian researcher V.M. Popov who has used the transfer function in the critical cases. The authors develop a new sufficient criterion for (a.r.a.s.), with efficient technique of calculus.

In the second part - there are obtained the analytic - numerical solutions and the conditions for the regulator parameters for the realization of the absolute stability for the airplane autopilot route in the case of rolling oscillations. At the end authors prove practically the theorem Kalman - Yakubovich - Popov for the equivalence of these methods. (Th. K-Y-P). In the last section of the paper it is presented the optimal control

for the flight system in the case of rolling oscillations. The optimization is made using the maximum principle of <u>Pontreaguine</u>; the authors solve the problem of minimum time. It is determined the command function and the optimal trajectory for this system.

AN APPROXIMATION OF A SURFACE

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Abstract: In this paper we approximate a simple (respect to Oz) surface with piecewise cylindrical surface, and give an estimate of the error.

A FUNCTIONAL INEQUALITY THAT GENERALIZES BERGSTRÖM'S AND RADON'S INEQUALITIES

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Abstract: In the present work we present and demonstrate a functional inequality for convex (concave) functions from which result Bergström and Radon's inequalities, through particularization, as well as other numberless inequalities, known or new.

ON A DOUBLE INEQUALITY

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Abstract: In this paper the author proves the double inequality:

$$\left(x - \frac{1}{x+1}\right)^{-1} < \sum_{n=1}^{\infty} \frac{1}{1 + x + x^2 + \cdots + x^n} < \left(x - \frac{1}{x}\right)^{-1}, \qquad \forall\, x > 1$$

ANALYZING THE INFLUENCE OF IE FACTORS ON RECRUITMENT AND SELECTION PERFORMANCE USING KALMAN FILTER

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Abstract: The human factor is known as being one of the key factors through which the organization may obtain success (Porter M.E., 1990, p.33). Only attracting, recruiting and maintaining those right candidates, with proper skills, knowledge and competencies, an organization may obtain performance in a global competing environment, dynamic and in continuous change (Sims R.R., 2002, p.2). Performance of a recruitment and selection process depends on the internal and external (IE) factors, which are analyzed in our article. We implemented the Kalman filter on a new area, that of HR recruitment and selection, because is well known that this model has been used in engineering, or in finance. This will help us to find new solutions, to develop new strategies, to improve forecast accuracy, to improve communication in recruitment and selection processes, to know its limits and to overcome its inefficiencies and also, to establish in what measure each factor, internal or external, will influence our analyzed processes.

ON NONLINEAR CONTRACTIONS IN FUZZY METRIC SPACES

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Abstract: The present paper is a study of a class of nonlinear probabilistic contractions in the setting of fuzzy metric spaces in the sense of Kramosil and Michalek. We discuss and exemplify the conditions of Ćirić - Jachymski [J. Jachymski, On probabilistic φ contractions on Menger spaces, Nonlinear Analysis: Theory,Methods & Applications 73 (2010), 2199–-2203] and Xiao et al.[J.-Z. Xiao, X.-H. Zhu, X.-Y. Liu, An alternative characterization of probabilistic Menger spaces with H-type triangular norms, Fuzzy Sets and Systems, 227 (2013), 107-114].

SOME CONSIDERATIONS ON JENSEN'S INEQUALITY

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Abstract: In this paper we establish that the inequality of Radon is a particular case of Jensen's inequality. Using some refinements and counterparts of Jensen's inequality, we will obtain several refinements and counterparts of Radon's inequality, which implies Cauchy's inequality, Bergström's inequality and Hölder's inequality.

A SANDWICH THEOREM FOR
CONVEX SET-VALUED FUNCTIONS

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Abstract: We denote by n($\mathbb{R}$) the family of all non-empty subsets of $\mathbb{R}$. A set-valued function $F : I \to$ n($\mathbb{R}$) is said to be convex if it satisfies $tF(x) + (1 - t) F(y) \subset F(tx + (1 - t) y)$ for all t $\in$ [0; 1] and x; y from the open interval I. We provide a sandwich type theorem for convex set-valued functions as a counterpart of a known result in the context of the usual convexity.

ARITHMETIC MEAN OF VALUES AND VALUE AT MEAN
FOR CONVEX FUNCTIONS

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Abstract: We give here some extensions of inequalities of T. Popoviciu and T. Rado. We also give more general forms of this inequality by replacing the arithmetic mean with others. Finally we use these inequalities to establish similar inequalities of T. Popoviciu and T. Rado type.

RELATIVE CONVEXITY AND ITS APPLICATIONS

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Abstract: It is well known the important role played by the classical inequality of Jensen in mathematics, probability theory, economics, statistical physics, information theory etc. See the books of Niculescu and Persson [4], Pecaric, Proschan and Tong [8] and Simon [9]. In recent years, a number of authors have noticed the possibility to extend this inequality outside the framework of convex functions and/or that of

probability measures. See for example the papers of Czinder and Páles [1], Florea and Niculescu [2], Niculescu and Spiridon [5], Niculescu and Stephan [6], [7] and the references therein.

The aim of our talk is to discuss a rather general condition under which the inequality of Jensen works for certain convex combinations of points (not all in the domain of convexity of the function under attention) and to emphasize its importance in majorization theory.

Our approach is based on a new concept of point of convexity (which is more general than that of Florea and Paltanea [3]).

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TWO MATHEMATICAL GENIES: RAMANUJAN AND ABEL

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Abstract: Both genies were tormented by sickness and poverty. The indian SRINIVASA RAMANUJAN (1887-1920) was born in the indian village Erode (the state of Tamil Nadu) and at two years after his born his parents moved with the child in the place of Kumbakonam (at approximately 260 km south of Madras) where his father was accountant at a textile shop. Here he makes his elementary and secondary studies proving different abilities for mathematics. His mother that was a convinced brahmin raised and educated him in the brahmin spirit (frequent participation to the temple, vegetarian food etc). In 1914 after an exchange of letters with the famous mathematician Hardy from Cambridge, he goes to England to finish his mathematical studies under the influence of Hardy and Littlewood. His mathematical work concerned mainly the theory of numbers, the theory of sets and the analytical functions theory. In 1920 he died at Kumbakonam. He left over 4000 formulas and theorems (many of them unsolved) that even today, after almost 100 years, give work to mathematicians and informaticians, especially as they proved to have applications in the quantum mechanics and in the black holes theory.

NIELS HENRIK ABEL (1802-1829) was the greatest mathematician that Norway gave to the world. Son of a vicar, he raised and lived in a poor and divided family, but thanks to his professor Berdt Holmboe and to the Norwegian govern he could finish his university studies. Due to a scholarship of the University from Christiania (today, Oslo) and to a stipend of some professors he succeeded to know Crelle and to publish the greatest part of his mathematics work in the journal that Crelle initiated in 1826. Unfortunately, touched by tuberculosis, he died in misery (having no permanent professor position) at Arendal (in the south of Norway). Abel brought important contributions to the development of mathematics. Thus, he demonstrated well-grounded the impossibility of solving by radical the algebraic equations of degree greater than 5 (degree 5), he studied and elaborated a veritable class of equations (which carry its name, "the abelian equations" solved by radical), he introduced new notions in algebra and analysis like: fields and irreducible polynomial in a given field, he studied and elaborated certain properties of an extensive class of transcendental functions, he elaborated a theory of elliptical functions (elliptical and hyper-elliptical integrals), he was preoccupied by the problem of rigorous in analysis (he introduced the notion of "uniform convergence"), he introduced the abelian integrals and the abelian groups.

In 1830 (postmortem), Abel together with Jacobi received the greatest award of the Academy from Paris in value of 3000 francs. The mathematical work of Abel is tremendous and as remarked the famous mathematician Charles Hermite (1822-1901), from this work the mathematicians could be inspired for 500 years. In 2002, the Academy of Science from Norway, initiated a medal and an Abel annually award for deep results in mathematics.

CONVEXITY PROPERTIES WITH APPLICATIONS IN STOCHASTIC COMPARISON

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Abstract: We present some weak majorization type orders with important applications in stochastic comparisons of convolutions. Further we point out a convexity criterion which refers to the Mac Laurin means. This result is applied to stochastically compare the corresponding order statistics from two sets (of same size) of independent random variables.

EVALUATING TRENDS OF AIR QUALITY USING NON-PARAMETRIC TESTS IN VARIOUS URBAN AREAS OF ROMANIA

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Abstract: The paper presents the screening of various Daubechies wavelet–feedforward neural networks (FANN) configurations applied to time series of ground-level ozone, nitrogen dioxide, and PM_{10} fraction recorded at 4 automated monitoring stations located in different urban areas of Romania, to identify

common configurations with optimal generalization performance for each pollutant. A statistical characterization of time series was applied to assess dataset variability. Time series were passed through various FANN. Each time series was decomposed in 4 time-scale components using 3-level wavelets, which have been passed also through FANN, and recomposed into a single time series. Daubechies db3 wavelet – Rprop FANN (6-4-1) utilization gave positive results for ozone time series optimizing the exclusive use of the FANN for hourly-recorded time series. Nitrogen dioxide was difficult to model due to time series specificity, but wavelet integration improved FANN performances. Daubechies db3 wavelet did not improve the FANN outputs for PM_{10} time series.

NETWORKS DEFINED BY ALTERNATIVE RECURRENCES IN THE COMPLEX PLANE

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Abstract: If $\mathcal{F} = \{f_i : \mathbb{C} \times \mathbb{C} \to \mathbb{C} | i \in I\}$ is a family of functions we define a "sequence" by alternative recurrence respect to the family a sequence $(a_n)_{n \in \mathbb{N}}$ that verifies the relations $a_{n+1} \in \{f_i(a_n, a_{n-1}) | i \in I\}$ for any $n \in \mathbb{N}^*$, where $a_0, a_1 \in \mathbb{C}$ are given. We prove that for particular cases of family $\mathcal{F}$ we can obtain the regular networks in the complex plane.

THE PEXIDER VERSION OF A FUNCTIONAL EQUATION RELATED BY POMPEIU'S AND HOSSZU'S EQUATIONS

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Abstract: The Pompeiu's and Hosszu's equations belong to a wider class of functional equations in that it is comparing the Cauchy-kernel of the unknown function with respect to two given binaries operations. In paper we consider the Pexider's variant of an equation in that appear the binary operations $x \circ y = x + y + xy$ (from Pompeiu's equation) and $x * y = x + y - xy$ (from Hosszuu's equation): $f(x + y + xy) + g(x + y - xy) = h(x) + k(y), x, y \in \mathbb{R}$, where f, g, h, k are unknown functions.

TURNING POINTS IN THE DEVELOPMENT OF SCIENCE

ALEXANDRU POPESCU-ZORICA

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Abstract: We present few turning points in the history of the mathematics. We start with some famous problems of antiquity and end with Einstein's theory of relativity.

A NEW APPROACH OF WEAK MAJORIZATION AND APPLICATIONS

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Abstract: We introduce a new type of weak majorization, with applications in different areas. Based on this new concept we give a nice generalization of Hardy-Littlewood-Polya's inequality from which we deduce a classical result of [2,3] Tomic and Weyl [2,3]. For $x \in \mathbb{R}_+^N$ let denote by $x_{[i]}$ the ith largest component of the vector x.

Definition: If $x, y \in \mathbb{R}_+^N$ we say that x is strongly majorized by y, denoted $x \ll y$ provided that:

$$\frac{x_{[1]}}{y_{[1]}} \leq \frac{x_{[2]} + \cdots + x_{[N]}}{y_{[2]} + \cdots + y_{[N]}}, \ldots, \frac{x_{[1]} + \cdots + x_{[N-1]}}{y_{[1]} + \cdots + y_{[N-1]}} \leq \frac{x_{[N]}}{y_{[N]}}, \ldots, \frac{x_{[1]} + \cdots + x_{[N]}}{y_{[1]} + \cdots + y_{[N]}} \leq 1$$

Theorem: Let $x, y \in \mathbb{R}_+^N$ be two vectors such that $x \ll y$. Then for each convex function $f: \mathbb{R} \to \mathbb{R}$ we have:

$$\frac{f(x_1) + \cdots + f(x_N)}{N} \leq \propto \frac{f(y_1) + \cdots + f(y_N)}{N} + (1 - \propto)f(0)$$

where $\propto = \frac{x_{[1]} + \cdots + x_{[N]}}{y_{[1]} + \cdots + y_{[N]}}$

Later on, we present some applications of this new majorization concept in graph theory using an idea of Dahl [1] and we develop an interesting theory about some measure properties of a special class of Schur concave functions. These properties will be emphasized via isoperimetric inequality and Brunn-Minkowsky inequality.

References:
[1] G. Dahl, _Majorization and distances in trees_, Networks 50 (2007), 251-257.
[2] M. Tomic, _Theoreme de Gauss relatif au centre de gravite et son application_, Bull. Soc. Math. Phys. Serbie 1 (1949), 31-40.
[3] H. Weyl, _Inequalities between two kinds of eigenvalues of a linear transformation_, Proc. Nat. Acad. Sci. U. S. A. 35 (1949), 408-411.

ON THE GENERAL EXISTENCE OF MINIMUM PROBLEM IN BANACH SPACE

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Abstract : In this note we give some extensions of a recent result concerning the minimum problems in Banach spaces. These extensions are based on the fact that the topological degree of a coercive map is one and this still remains true for a pseudo-monotone potential map between a reflexive Banach space and its dual space. Some considerations concerning the minimum problem and the solution property of degree required in applications are also appended.

THE HERMITE-HADAMARD INEQUALITY ON SIMPLICES

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Abstract: This talk is based on a joint work with Flavia-Corina Mitroi. We consider an n-dimensional simplex in $\mathbf{R^n}$ and a Borel measure on it. The so-called Hermite-Hadamard inequality relates the normalized integral of a continuous convex function with respect to this measure to the value of the function at the barycenter of the measure as well as to a certain convex combination of the function values at the vertices of the simplex. In this talk we shall present a converse result under certain assumptions on the measure. In other words, we show that the Hermite-Hadamard inequality, being assumed for all simplices in a nonempty open convex set, characterizes convex functions in a fairly general case. In our reasoning we thoroughly use the fact that a continuous function is convex, if and only if for all simplices and all affine functions L the function f + L attains its supremum at an extreme point of the simplex.

FIXED POINT PROPERTIES OF A CONVEX COMBINATION OF PROJECTIONS

DINU TEODORESCU

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Abstract: The aim of this paper is to investigate the fixed point properties of a convex combination of projection operators.

CURRICULUM PARADIGM IN MODERN MATHEMATICS

MARINA TOMA

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Abstract: In this paper I am interested of some of the greatest specialists in this area as Franklin Bobbitt, John Dewey, Ralph Tyler, William Pinar and Michael Apple.

SOME APPLICATIONS ON GROUPS FROM STUDENT'S CONTESTS

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Abstract: This article is a collection of a few interesting applications on finite groups and morphisms of groups, applications which already have been given to undergraduate's international and national contests, some of them using only basic ideas of modern and abstract algebra. Students studying algebra in graduate school will obviously go further, as will those who are interested in one or more of the applications. The aim of this paper is to sustain students studying algebra and improve their ability to handle abstract ideas.

INTERESTING PROPERTIES OF A SUBGROUP

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Abstract: The basic ideas and ways of thought of algebra permeate nearly every part of mathematics. Moreover, modern algebra cultivates the ability to handle abstract ideas. From the most basic ideas of the modern and abstract algebra, the notions of group and subgroup are fundamental. We all know that a group G is an algebraic structure, more precisely a nonempty set endowed with an operation which combines between them two elements from G, obtaining in this way new and spectacular results and properties for the elements and also, for the subsets of G.

In this article, we present how a subgroup of a group can receive interesting properties by using two nonempty subsets of the main group and a positive integer previously fixed. In the final paragraph we give similar applications already well known from the books and students contests.

THE USE OF CONVEXITY IN THE STUDY OF SEQUENCES RELATED TO THE CONSTANTS OF NAPIER AND EULER

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Abstract: In this work we emphasize that the principal facts related to the monotonicity and the speed of convergence of the basic sequences which define the constant of Napier (or the number of Euler) and of the constant of Euler (also named the constant of Euler-Mascheroni) are consequences of the inequality of convexity of Hermite-Hadamard.

Friday – June, 13th, 2014

13:30-14:00 OPENNING CEREMONY

Plenary Lectures

14:00-14:30
MIRCEA LUPU - *THE ABSOLUTE STABILIZATION AND THE OPTIMAL CONTROL OF NONLINEAR DYNAMICAL SYSTEMS FOR SPECIAL CASES. FLIGHT CONTROL SYSTEMS IN THE CASE OF ROLLING OSCILLATIONS*

14:30-15:00
VASILE POP - *NETWORKS DEFINED BY ALTERNATIVE RECURRENCES IN THE COMPLEX PLANE*

Talks

	NONLINEAR ANALYSIS	DIFFERENTIAL EQUATIONS AND APPLIED MATHEMATICS
	Chairman: MIRCEA LUPU	**Chairman: VASILE POP**
15:00-15:20	**ANTONIO- JESÚS LÓPEZ-MORENO, JOSÉ-MANUEL LATORRE-PALACIOS** *PRESERVATION OF LIPSCHITZ CONSTANTS BY LINEAR POSITIVE OPERATORS*	**MIRON OPREA** *TWO MATHEMATICAL GENIES: RAMANUJAN AND ABEL*
15:20-15:40	**SILVIU SBURLAN** *ON THE GENERAL EXISTENCE OF MINIMUM PROBLEM IN BANACH SPACE*	**DORIN MĂRGHIDANU** *A FUNCTIONAL INEQUALITY THAT GENERALISES BERGSTRÖM'S AND RADON'S INEQUALITIES*
15:40-16:00	**DINU TEODORESCU** *FIXED POINT PROPERTIES OF A CONVEX COMBINATION OF PROJECTIONS*	**VASILE POP** *THE PEXIDER VERSION OF A FUNCTIONAL EQUATION RELATED BY POMPEIU'S AND HOSSZU'S EQUATIONS*
16:00-16:20	**DOINA MIHAI, NICOLETA FLOREA** *ANALYZING THE INFLUENCE OF IE FACTORS ON RECRUITMENT AND SELECTION PERFORMANCE USING KALMAN FILTER*	**CRISTINEL MORTICI** *ARITHMETIC MEAN OF VALUES AND VALUE AT MEAN FOR CONVEX FUNCTIONS*
16:20-16:40	**GABRIEL VALENTIN CRISTEA** *APPROXIMATIONS OF THE CLASSICAL AND GENERALIZED EULER-*	**GEORGIANA VELICU, CĂTĂLINA GRINDEI** *SOME APPLICATIONS ON GROUPS FROM STUDENT'S CONTESTS*

	MASCHERONI CONSTANT	
16:40-17:00	**CONSTANTIN GHIŢĂ** *CONSIDERATIONS ON THE CONFIGURATION OF ANISOTROPIC SOLID*	**DAN COMA** *A GEOMETRIC INEQUALITY OF THE GENERALIZED ERDOS - MORDELL TYPE*
17:00-17:30	BREAK	
	Chairman: SILVIU SBURLAN	**Chairman: DORIN MĂRGHIDANU**
17:30-17:50	**ALINA CONSTANTINESCU, NICOLAE POPESCU** *MARKOV CHAINS APPLIED FOR PHYSICAL AND MECHANICAL ALLIED STEEL LABORATORY TRIALS*	**DUMITRU FANACHE** *USING GRAPHS COLORING IN DIFFERENT FIELDS OF APPLICATIONS*
17:50-18:10	**OCTAVIAN MIRCIA GURZĂU** *AN APPROXIMATION OF A SURFACE*	**MARINA TOMA** *CURRICULUM PARADIGM IN MODERN MATHEMATICS*
18:10-18:30	**SORINEL DUMITRESCU** *RAMANUJAN APPROXIMATIONS FOR GAMMA FUNCTION*	**ALEXANDRU POPESCU-ZORICA** *TURNING POINTS IN THE DEVELOPMENT OF SCIENCE*
18:30-18:50	**GEORGIANA VELICU, SIMONA MINCU** *INTERESTING PROPERTIES OF A SUBGROUP*	**DOREL MIHEŢ, CLAUDIA ZAHARIA** *ON NONLINEAR CONTRACTIONS IN FUZZY METRIC SPACES*
18:50-19:10	**DANIEL DUNEA, ALIN POHOAŢĂ, EMIL LUNGU, ŞTEFANIA IORDACHE** *EVALUATING TRENDS OF AIR QUALITY USING NON-PARAMETRIC TESTS IN VARIOUS URBAN AREAS OF ROMANIA*	**ANDREI VERNESCU** *THE USE OF CONVEXITY IN THE STUDY OF SEQUENCES RELATED TO THE CONSTANTS OF NAPIER AND EULER.*
19:10-19:30	**FLORIN BOJOR** *FIXED POINT THEOREMS FOR HARDY ROGERS TYPE ON METRIC SPACES WITH SYMMETRIC GRAPH*	**VASILE BERINDE, GABRIELLA KOVACS** *STABILIZING CHAOTIC DYNAMICAL SYSTEMS THROUGH FIXED POINT ITERATIVE METHODS*

CONVEX FUNCTIONS AND INEQUALITIES

Workshop

Chairman: CONSTANTIN NICULESCU

9:00-9:20
CONSTANTIN NICULESCU - *RELATIVE CONVEXITY AND ITS APPLICATIONS*

9:20-9:40
EUGEN PĂLTÂNEA - *CONVEXITY PROPERTIES WITH APPLICATIONS IN STOCHASTIC COMPARISON*

9:40-10:00
MIRCEA MERCA *- ON A DOUBLE INEQUALITY*

10:00-10:20
BREAK

10:20-10:40
NICUȘOR MINCULETE - *SOME CONSIDERATIONS ON JENSEN'S INEQUALITY*

10:40-11:00
ADRIAN CARABINEANU - *THE STUDY OF THE POTENTIAL FLOW PAST A SUBMERGED HYDROFOIL BY THE COMPLEX BOUNDARY ELEMENTS METHOD*

11:00-11:20
FLAVIA-CORINA MITROI-SYMEONIDIS - *A SANDWICH THEOREM FOR CONVEX SET-VALUED FUNCTIONS*

11:20-11:40
AURELIA FLOREA - *GENERALISATIONS OF FINK'S INEQUALITY*

11:40-12:00
IONEL ROVENȚA *- A NEW APPROACH OF WEAK MAJORIZATION AND APPLICATIONS*

12:00-12:20