The 20th Conference on Applied and Industrial Mathematics (CAIM-2012) dedicated to the 70th anniversary of Academician Mitrofan M. Choban

"The 20th Conference on Applied and Industrial Mathematics" (CAIM 2012) took place in Chişinău (Republic of Moldova) from August 22nd to 25th, 2012. It was organized with the financial support of Romanian Society of Applied and Industrial Mathematics (ROMAI), Mathematical Society of Moldova, Academy of Sciences of Moldova, Tiraspol State University (Chişinău), Academy of Economic Studies of Moldova, Institute of Mathematics and Computer Science of the Academy of Sciences of Moldova, Moldova State University. The conference was dedicated to the 70th anniversary of Professor Mitrofan Choban, President of the Mathematical Society of Moldova and Vice-President of the Romanian Society of Applied and Industrial Mathematics. This event was conceived to provide a discussion forum on the achievements of the last decades in the fields of Mathematics, Computer Sciences, Physics and its Applications in retrospective analysis, as well as to highlight the present state of investigations and education in these fields.

CAIM 2012 was hosted by the Faculty of Physics, Mathematics and Information Technologies of the Tiraspol State University, Chişinău.

During the conference over 190 reports were delivered at plenary (16) and parallel sessions (175).

Sessions of the conference were held in five plenary sessions and eight parallel scientific sessions:

1. Mathematical Analysis.
2. Differential Equations.
3. Algebra and Logic.
4. Geometry and Topology.

5. Analytical and Numerical Methods in Partial Differential Equations.

6. Computer Science.

7. Mathematical Models in Industry, Physics and Biology.

8. Education. Didactics of Mathematics, Physics and Informatics.

The conference was attended by over 100 participants from abroad including Romania, Ukraine, Bulgaria, Canada, Armenia, Estonia, Germany, Israel, Italy, Russian Federation, Spain, Tajikistan, Belarus.

During the plenary sessions a number of well-known scholars presented their papers, among them: Mati Abel (Estonia) *"Main classes of Gelfand-Mazur algebras"*, Alexander Arhangel'skii (Russia) *"A nice class of topological spaces"*, Vasile Berinde (Romania) *"On the stability of multi-step fixed point iteration procedures"*, Ilie Burdujan (Romania) *"Automorphisms and derivations of homogeneous quadratic differential systems on R^3"*, Adrian Carabineanu (Romania) *"A complex boundary element method for the study of the potential flow past submerged profiles"*, Sergiu Cataranciuc (Moldova) *"Algebraic topology of the multi-ary relation in the applications"*, Svetlana Cojocaru and Constantin Gaindric (Moldova) *"Research in Computer Science and Information Technology at the Institute of Mathematics and Computer Science"*, Adrian Constantinescu (Romania) *"Some topological aspects of the finite generation of subalgebras. I: Variations on a Theorem of Goodman and Landman"*, Ion Crăciun (Romania) *"Some problems of the linear theory of piezo-electric micropolar thermoelasticity"*, Peter Kenderov (Bulgaria) (in collaboration with Mitrofan Choban (Moldova) and W. B. Moors (New Zeland)) *"Eberlein Theorem for Sequences of Sets and Fragmentability of Function Spaces"*, Mario Lefebvre (Canada) *"First passage to a semi-infinite line for a two-dimensional Wiener process"*, Boris Loginov (Russia) *"Branching Equations and Branching Equations in the root-subspaces potentiality conditions for Andronov-Hopf bifurcation II"*, Radu Miron (Romania) *"The generalized Lagrangian mathematical systems"*, Gheorghe Paun (Romania) *"Membrane Computing Basics, Recent Developments, Applications"*, Vesco Valov (Canada) *"Homogeneous compacta"*, Nicolae Vulpe (Moldova) *"Global analysis of infinite singularities of quadratic vector fields"*.

A number of papers presented at different sessions aroused valuable and insightful discussions: Yaroslav Bihun, Inessa Berezovska and Nataliya Romanenko (Ukraine) *"Averaging of a multifrequency boundary-value problem with constant delay and linearly transformed argument"*, Iurie Calin and Valeriu Baltag (Moldova) *"Invariant center conditions for quadratic differential system with degenerate infinity perturbed by cubic nonliniarities"*, Dumitru Cozma (Moldova) *"Darboux integrability in cubic systems with two invariant straight lines"*, Florin Damian (Moldova) *"Involution without fixed points on hiperbolic manifolds"*, Vasile Glavan (Moldova) *"Horseshoes as viable sets in set-valued dynamics"*, Valeriu Guţu (Moldova) *"The Pythagoras tree and Borsuk's conjecture"*, Anca Veronica Ion and Raluca Mihaela Georgescu (Romania) *"Numerical investigation of the Bautin-type bifurcation for a delay differential equation"*, Stelian Ion (Romania) *"A soft package to estimate the parameters in an ecological model"*, Vladimir Izbash (Moldova) *"Polynomial morphisms of medial quasigroups"*, Nicolae Jitaraşu (Moldova) *"On the boundary value problem for elliptic and parabolic equations"*, Alexandru Lazari (Romania, Moldova) *"Polynomial algorithms for probabilistic characterization of composed stochastic sys-*

tems with final critical state", Vadim E. Levit and Eugen Mandrescu (Israel) *"Critical sets in almost unicyclic Konig-Egervary graphs"*, Dmitrii Lozovanu and Maria Capcelea (Moldova) *"Determining the optimal stationary strategies for stochastic positional games"*, Ekaterina Mihaylova (Bulgaria) *"Co-homogenity and Klebanov Spaces"*, Gheorghe Mishkoy, L. Mitev and D. Begenari (Moldova) *"Numerical results for probability of states with PH distribution for Polling models"*, Marcelina Mocanu (Romania) *"A unifying approach to Sobolev-type spaces on metric measure spaces"*, Vasile Neagu (Moldova) *"Symbol of singular integral operators on piecewise Lyapunov contours"*, Andrei Perjan and Galina Rusu (Moldova) *"Some convergence estimates for abstract second order singularly perturbed Cauchy problems with monotone nonlinearities"*, Mihail Popa (Moldova) *"Applications of algebraic methods to the center-focus problem"*, Mefodie Raţiu (Moldova) *"Expressibility of implication in intuitionistic logic with the method of the formula realization of algebras"*, Vladislav Seichuc (Moldova) *"On appoximate solving of some nonlinear mixed singular integral equations"*, Fidir Sokhatsky and Iren Fryz (Ukraine) *"About orthogonality of multiary operations"*, Alexandru Suba and Vadim Repesco (Moldova) *"Cubic systems with degenerate infinity and a triplet of parallel invariant straight lines"*, Parascovia Syrbu (Moldova) *"Recursively differentiable quasigroups"*, Marcel Teleuca, Ilie Lupu, and Larisa Sali (Moldova) *"Didactical aspects of the organization of investigation activities in mathematics"*, Alexandra Tkachenko (Moldova) *"Fuzzy multicriteria transportation model"*, Inga Ţiţchiev (Moldova) *"Soundness and Equivalence of Workflow Nets and Finite State Automata"*, and other.

The morning plenary session of August 24, 2012 was dedicated to the presentation of the book "Academicianul M. Ciobanu la a 70-a aniversare" (Academicin M. Choban at the 70th anniversary).

The closing session of the conference took place on August 24, 2012. It was dedicated to a broad discussion concerning the major present-day problems in the field of Mathematics, Computer Science, Physics and its Applications encountered by Moldovan and foreign researchers. The final session was followed by the traditional General Assembly of ROMAI.

The present edition of the journal "Buletinul Academiei de Ştiinţe a Republicii Moldova. Matematica" comprises some works presented at the Conference.

The Programme of the Conference and the research papers announced by the participants (one book of communications with the volume of 242 pages in the domains of Mathematics, Computer Science and its Applications and other book of communications with the volume of 266 pages in the domains of Education) were published in advance and distributed during the official opening of the Conference.

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Council of the Mathematical Society of the Republic of Moldova