DEPARTMENT OF MATHEMATICS

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Researches in MATHEMATICAL ANALYSIS

RESEARCH FIELDS


BOOKS


PUBLISHED PAPERS

2. Lipovan, O., A criterion for pseudosubmeasurable functions, Scientific Bulletin of the „Politehnica” University of Timișoara, Serie Mathematics-Physics, Tom 49(63),1, 2004, 45-51;
9. Tudor, Gh., L’équation Diophantienne \((x_1^n \cdot x_2^2 \cdot \ldots \cdot x_k^2)^p = y^q\) (II), Scientific Bulletin of the „Politehnica” University of Timișoara, Serie Mathematics-Physics, Tom. 49(63), Fasc. 1, 2004, pp. 13-19;
10. Tudor, Gh., L’équation Diophantienne \(x_1^n \cdot x_2^2 \cdot \ldots \cdot x_k^2 = y_1^n \cdot y_2^2 \cdot \ldots \cdot y_m^n\) (III), Scientific Bulletin of the „Politehnica” University of Timișoara, Serie Mathematics-Physics, Tom. 49(63), Fasc. 2, 2004, pp. 1-8;
11. Tudor, Gh., Binzar, T., On a Diophantine equation, Scientific Bulletin of the „Politehnica” University of Timișoara, Serie

**PERSPECTIVES**

- Generalizations of classical functional equations and applications
- Studies on the stability of quadratic mappings
- The study of transfer of the continuity and quasi-continuity from the terms of a multifunction net to its pointwise limit in the general case of multifunction valued in a topological space
- Further developments in *Qualitative Theory of Functional Equations and Elementary Functions*

Contact: Assist. Liviu Ciurdariu, lcadariu@etv.utt.ro

### Research Fields in Algebra and Geometry

- Differential Geometry and Applications
- Pseudo-riemannian manifolds. Ultrametrics, topological structures. Deformations, spaces of constant curvature. Non-twist systems, shearless tori, reconnection bifurcation, transport barrier. Dynamics of symplectic non-twist diffeomorphisms. Non-twist property is related to the violation of the main assumption of the KAM (Kolmogorov, Arnold, and Moser) theorem
- Theory of Categories. Ordered categories a-categories. Projective limits
- Analysis on Manifolds. Currents and distribution tensors on manifolds. Foliated Manifolds
- Distribution tensor. Dynamical systems
- Control problems on Matrix Lie Groups. Control integrability and stability on some concrete mechanical problems
- Lie groups. Hamiltonian mechanical systems. Poisson dynamics. Lie-Trotter formula
- Formal logic. Propositional logic. Formal set theory. The formal geometry.

### Research Contracts

1. Theoretical and numerical study on *Frequency map analysis to detect boundary tori in the dynamics of non-twist maps* (supported for E. Petrişor by EURATOM-CEA France).
2. Investigation of non-twist behaviour of non-linear oscillators modeling phenomena in astrophysics (collaboration with a group from Universitat Politecnica de Catalunya, Barcelona)

### Published Papers

2. Lugojan, S., *Linear connection on discrete
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manifolds, Recent Advances in Geometry and Topology; Cluj Univesity Press, 2004, ISBN
973-610-277-7, p.221-225;


6. Milici, C., Sur le calcul automatiques integrales trigonometriques (III), Scientific Bulletin of the „Politehnica” University of Timișoara, Serie Mathematics-Physics, Tom.

Contact: Lecturer Dr. Camelia ARIEȘANU, cariesan@etv.utt.ro

Researches in APPLIED MATHEMATICS

RESEARCH FIELDS

➢ Stochastic McShane Modeling with Applications in Economical Problems and Dynamical Systems. McShane’s stochastic belated integral. Stochastic McShane system

➢ Non Gaussian white noise. Probabilistic Structure and Applications. Sub-measures with probabilistic structures. Sub measurability and inerrability model

➢ The Study of the Applicability of Modern Numerical Methods (MEF, BEM, CVBEM) for the Solvability of Partial Differential Equations

➢ Aerodynamics of Specialized Nets. Hydrofoil theory. Boundary value problems


➢ Probabilistic metric structures random equations, fixed point theorems, time series, applications. Stochastic processes


49(63), Fasc. 2, 2004, pp. 9-13;


PERSPECTIVES

➢ Studies on the topology of invariant systems sets of continuous systems

➢ Studies on topological structures and deformations

RESEARCH TEAM

➢ Prof. Dr. Nicolae BOJA
➢ Prof. Dr. Emilia PETRIȘOR
➢ Assoc. Prof. Dr. Iosefina MIHUȚ
➢ Assoc. Prof. Dr. Dan DĂIANU
➢ Lecturer Dr. Constantin BOTA
➢ Lecturer Dr. Sorin LUGOJAN
➢ Lecturer Dr. Cristian LĂZUREANU
➢ Lecturer Dr. Camelia ARIEȘANU
➢ Assist. Dr. Cătălin Vasi
➢ Assist. Constantin MILICI

PUBLISHED PAPERS


**PERSPECTIVES**

- Developments of stochastic McShane modeling with implications in economical problems and dynamical systems

- Study the Alflex’s equations of motion equilibrium, states and stability

- Extention of the Mathematica module *Optimal Power Price*, developed in collaboration with the Power Group at the Faculty of Electrotechnics and Electroenergetics

- Studies on stability and synchronism of electrical machines with Mathematica

- Studies on topological structures and deformations

**RESEARCH TEAM**

- Prof. Dr. Ioana CONSTANTIN
- Prof. Dr. Octavian LIPOVAN
- Prof. Dr. Adalbert KOVÁCS
- Assoc. Prof. Dr. Ioan GOLEŢ
- Assoc. Prof. Dr. Pavel NĂSLĂU
- Assoc. Prof. Dr. Doru PĂUNESCU
- Lecturer Dr. Romeo NEGREA
- Assist. Rodica ANGHELESCU
- Assist. Dan POPESCU
- Assist. Olivia BUNDĂU
- Assist. Bogdan CÂRUNTU
- Assist. Gheorghe TIGAN
- Assist. Florica RĂDUNĂ
- Assist. Remus ENE
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