

Research Center in Qualitative Theory of Systems with Applications in Control Problems (RCeQTSACP)

Director: Professor Bogdan Sasu

The aim of this center is to develop advanced research in qualitative theory of dynamical systems, mechanics and geometry, differential equations and PDE's, with applications in control theory. Our purpose is to consolidate the performance of our research team in order to achieve results with great impact at international level. The center envisages the organization of seminars, workshops, conferences and to support its members to participate in academic exchanges at prestigious universities and research centers. A central aim is to offer a collaborative environment aiming to stimulate high quality research in the qualitative theory of systems and to encourage the cooperation with national and international research teams.

4 research groups

17 researchers

10 PhD students

Mathematical Analysis and Applications in Control Theory

Group Leader: Professor Mihail Megan

Research Topics:

- differential equations in abstract spaces
- stability and hyperstability
- dichotomy and trichotomy
- controllability

Differential Equations and Nonlinear Analysis

Group Leader: Professor Petru Jebelean

Research Topics:

- variational methods in nonlinear boundary value problems
- topological methods in nonlinear analysis
- qualitative theory of differential equations

Asymptotic and Geometric Behaviour of Dynamical Systems

Group Leader: Professor Bogdan Sasu

Research Topics:

- asymptotic theory of dynamical systems and evolution equations
- qualitative theory of discrete dynamical systems
- control theory
- dynamical and geometrical properties of integrable systems

Dynamical Systems, Mechanics and Geometry

Group Leader: Associate Professor Petru Birtea

Research Topics:

- geometric mechanics
- symplectic geometry
- global analysis
- Lie theory

Recent Results (since 2012):

- Research Projects:
 - 2 projects in 2015
 - 8 projects in 2014
 - 8 projects in 2013
 - 9 projects in 2012
- Articles published in scientific journals:
 - 10 articles in 2015
 - 20 articles in 2014
 - 34 articles in 2013
 - 29 articles in 2012
- Books published:
 - 1 book in 2015
 - 2 books in 2014
 - 6 books in 2012



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Scientific event

INTERNATIONAL CONFERENCE ON OPERATOR THEORY

(<https://operatortheory25.wordpress.com/>)

- organized jointly by the Institute of Mathematics *Simion Stoilow* of the Romanian Academy and the Mathematics Department of the West University of Timisoara
- continues a long tradition started in 1976
- proceedings published by the *Theta Foundation* and distributed by *American Mathematical Society*

Scientific journal

Annals of the West University of Timisoara, - Mathematics and Computer Science Series

<http://www.degruyter.com/view/j/awutm>

Former website: <http://math.uvt.ro/anmath>

- first issued in 1963
- publishes refereed original papers in all branches of Mathematics and Computer Science
- online ISSN: 1841-3307, open access
- two issues/year

Main Research Directions

- Dynamical Systems: Asymptotic and Geometric Properties
- Differential Equations, Integral Equations and PDE's
- Geometry, Topology and Global Analysis
- Functional Analysis and Operator Theory
- Fixed Point Theory, Fuzzy Systems

Selected Research Projects

- *AGDS - Asymptotic and geometric properties of dynamical systems with applications in control theory*, Romanian National Authority for Scientific Research, CNCS-UEFISCDI, PN-II-RU-TE-2011-3-0103, 2011-2014, <http://www.agds.math.uvt.ro/> .
- *SDD - Geometric structures applied in stability and control problems for dissipative dynamical systems*, Romanian National Authority for Scientific Research, CNCS-UEFISCDI, PN-II-RU-TE-2011-3-0006, 2011-2014, <http://www.sdd.math.uvt.ro/> .
- *Diffeomorphism groups, fluid dynamics and related geometric structures*, Romanian National Authority for Scientific Research, CNCS-UEFISCDI, PN-II-ID-PCE-2011-3-0921, 2011-2014, http://www.physics.uvt.ro/~vizman/idei_cv/index.html .
- *REFADE - Cross-border research on functional analysis and differential equations*, Hungary-Romania Cross-Border Co-operation Programme 2007-2013, HURO/1001/264/2.2.3, 01.01.2012-31.12.2012, <http://refade.info.uvt.ro/index.html> .
- *DISCQ - Dissipation and invariant sets in the presence of conserved quantities for dynamical systems*, Romanian National Authority for Scientific Research, CNCS-UEFISCDI, Capacities – Bilateral Cooperation, Romania – Cyprus, 2013, <http://www.math.uvt.ro/evenimente/workshop-23.06.2015-disipare-si-multimi-invariante> .

