Area of activity, research objectives	Keywords
In the Department of Mathematics and Computer Science research is conducted in several directions: a. <u>Mathematics domain</u> • Differential geometry • Approximation theory • Probability and statistics • Dynamical systems, mechanics and complex functions • Applied mathematics b. <u>Computer Science domain</u> • Theoretical computer science • Applied informatics	Finsler, Lagrange and Hamilton spaces; Differential submanifolds ; Classes of operators; Fixed point theorems; Stochastic processes; Statistics order; Brownian motion; Equations of evolution; Univalent functions; Theory of mechanical systems; Numerical analysis; Graphs optimization; Data mining; Java; Oracle; Net; Artificial intelligence; Image processing;

Research group profile

In the fundamental mathematical research:

<u>Differential geometry</u>. The head of the group is prof. dr. Munteanu Gheorghe and the group research area is Finsler, Lagrange and Hamilton geometry, complex Finsler geometry, algebraic topology. Professor Gheorghe Munteanu is a PhD coordinator, a CNATCDU committee member and has, in addition to numerous ISI indexed articles, a monograph published in Springer Verlag „Complex spaces in Finsler Lagrange and Hamilton Geometries". A member of the geometry group is also prof. dr. Pitiş Gheorghe, the senior of the faculty and the coordinator of several valuable PhD theses. The results obtained by the members of the geometry group are contained in numerous ISI indexed articles. Also, lecturer dr. Mircea Neagu has a monograph published in Wiley entitled „Jet single-time Lagrange geometry and its applications".

<u>Approximation theory</u>. The head of the group is prof. dr. Păltănea Radu and the group main research area is operator theory. Professor Păltănea Radu is also the head of Mathematics and Computer Science department research center, is a PhD coordinator and author of the monograph „Approximation Theory Using Positive Linear Operators" published in Birkhauser, Boston, 2004.

<u>Dynamical systems, mechanics and complex functions</u>. The research area of this group covers a wide range that extends from evolutionary models until mechanics of fluids and solids and also geometric function theory. The group is mainly represented by prof. dr. Marin Marin. Professor Marin Marin is the author of more than 20 ISI articles, having also a monograph "Equations of evolution", published in Elliot & Fitzpatrick, Inc., USA, 2010.

Besides these researches in fundamental mathematics in the department is also carried out a research activity in <u>Applied mathematics,</u> in the following areas:
- Stochastic modeling
- Economic and financial mathematics
- Applied statistics
- Microporous media
- Operational research
- Numerical methods
- Combinatorial optimization
- Graph theory.

In Computer Science domain the research is both theoretical and applicative.

In the domain of <u>Theoretical computer science</u> we mention:
- Fundamental research in formal languages, automata and compilers
- Data security.

The research in <u>Applied Informatics</u> is focused on modern topics and technologies. The main areas of research are related to:

- Applications development in C# and Net
- Projects of machine learning type
- Data Mining
- Application development with Microsoft SQL Server database
- Computer graphics, image processing
- Software development in technologies like Java, Oracle, Eclipse
- Enterprise architecture and fat/rich clients
- Management of the database
- Fundamental research in formal languages, automata and compilers.

In the research activity of the teams of differential geometry, approximation theory, probability and statistics, informatics are also involved 21 PhD students.

Product research - development, invention, use cases

Due to the outstanding results obtained in the research activity five of the department members are Romanian Academy prize laureates:

- prof. dr. Gheorghe Pitiş
 Prize „Gheorghe Ţiteica" 1991

- prof. dr. Gheorghe Munteanu
 Prize „Gheorghe Ţiţeica" 2006

 - prof. dr. Radu Pǎltǎnea
 Prize „Simion Stoilov" 2007

 - assoc. Prof. dr. Eugen Pǎltǎnea
 Prize „Gheorghe Lazǎr" 2010

- prof. dr. Marin Marin
 Prize „Spiru Haret" 2012

Publications:
In the past 4 years the members of the research groups of our department have published more than 66 articles in ISI indexed journals, 134 articles in BDI journals and 116 articles in the proceedings of some major national and international conferences.

Completed and ongoing research projects at national and international level

Assoc. Prof. dr. Mihai Pascu is the coordinator of the research grant PCE „Stochastic analysis and parameter estimation in systems with memory", obtained in the national competition from 2012.

Organized conferences:
- 9ème Colloque Franco-Roumain de Mathématique Appliquées, 28 Août-2 September, 2008, Braşov
- The 7th Congress of Romanian Mathematicians, June 29- July 5, 2011, Braşov
- Finsler Extensions of Relativity Theory, August 29- September 4, 2011, Braşov
- International Conference on Virtual Learning, November 2-3, 2012, Braşov.

Selection of 7 key recent publications of the research group

1. **N. Aldea, Gh. Munteanu**, *On complex Landsberg and Berwald spaces,* Journal of Geometry and Physics, 62, (2012), 368-380.
2. **N.Voicu**, *On the fundamental equations of electromagnetism in finslerian spacetimes*, Progress in Electromagnetics Research, 113 (2011), 83-102.
3. **E. Pǎltǎnea**, *Bounds for mixtures of order statistics from exponentials and applications*, Journal of Multivariate Analysis, 102 (2011), 896-907.
4. **O. Popescu,** *Two generalizations of some fixed point theorems*, Computers & Mathematics with Applications, 62 (2011), 3912-3919.

5. **M. N. Pascu**, *Mirror coupling of reflecting Brownian motion and an application to Chavel's conjecture*, Electronic Journal of Probability, 16 (2011), Article 18, 504-530.
6. **M. Marin**, *Some results on analyticity with applications*, Journal of Computational Analysis and Applications, 13 (2) (2011), 388-398.
7. **A. Deaconu, E. Ciurea**,*The inverse maximum flow problem under L_k norms,* Carphathian Journal of Mathematics, 28(2012), 59-66.

Contact

Name: Prof. dr. Radu Păltănea email:radupaltanea@yahoo.com	web: www.unitbv.ro/dmin Phone: +40 268 414016 Fax: +40 26841406 Location: Corp P str. Iuiu Maniu 50, Brasov