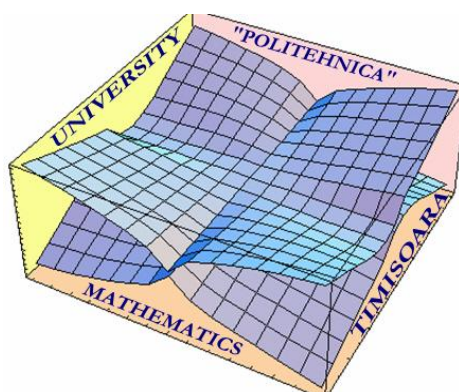


# ***DEPARTMENT OF MATHEMATICS***



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### Researches in *MATHEMATICS* and *APPLIED MATHEMATICS*

#### RESEARCH FIELDS

- *Functional equations. Functional equations inequalities.*
- *Frame and Wavelet Analysis. Hyers-Ulam stability.*
- *Analysis on manifolds pseudo-Riemannian.*
- *Stochastic analysis, stochastic differential equations, stochastic modeling, stochastic finances.*
- *Qualitative Theory of Functional Equation.*
- *Operator Theory.*
- *Dynamical systems and applications.*
- *Fluid mechanics.*
- *Calculus of variations and optimal control. Program Analysis and Verification.*
- *Ordinary differential equations.*
- *Theory of  $a$ -categories.*
- *Functional analysis.*
- *Numerical methods, asymptotic methods.*
- *Numerical results with FreeFem++ (modelling and numerical simulations).*
- *Differential equations, numerical solutions, stability.*
- *Optimal control, collocation-type methods.*
- *Spectral methods in Hydrodynamic stability.*
- *Ricci flow. Spaces of Riemannian Metrics.*
- *Geometry-Mechanical geometry*
- *Statistics – generalized linear models*

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**PERSPECTIVES**

- Study the fixed point theorems for forward-backward stochastic differential equations and applications to finance modelling.
- Study the Stochastic Delay Differential Equations with Markovian Switching and their applications to automotive engineering.
- Stability in  $so_4$  and  $so_3$ . Numerical stability in mechanics geometry.
- New results on frames, fusion frames and Hyers-Ulam stability.
- Probabilistic applications to control statistic of quality and forecasting.
- Global dynamical systems on topological manifolds.
- Numerical Methods and Engineering Applications with Mathematica.
- Numerical Methods in Mathematics Financiar with Matlab.
- Calitativ studies of some dynamic systems using semigroup of operators.
- We intend to use the fixed points methods to obtain new results of stability for various types of functional equations
- Bifurcation theory.
- Deformation Geometry of material structure.
- Stochastic resonance phenomena and control of some electronics circuits
- Participate at the international conferences and publish books.

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