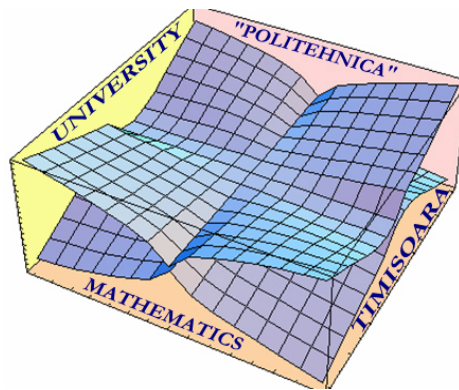


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Researches in MATHEMATICAL ANALYSIS

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.
- 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

RESEARCH GRANTS

1. CNCSIS Reseach Grant – AT, theme 1, CNCSIS code 53, No. 91GR/2007 - *Stability and control of the dynamical systems with stochastic perturbations and applications to finances and aeronautics (Stabilitatea si controlul sistemelor dinamice cu perturbatii stocastice si aplicatii in economie si aeronautica)* (Director: R. Negrea).
2. CNCSIS Research Grant– At, theme 1, CNCSIS code 39, No. 226/2006-2007 – *Geometrical study of some systems of partial differential equations by the 2nd order and of the geometrical modeling structures (Studiul geometric al unor sisteme de ecuatii cu derivate partiiale de ordinul 2 si al structurilor geometrice modelatoare)* (Director: C. Vasii).
3. Romanian Academy Research Grant, theme 3-Mathematical Sciences, No. 268/ 2007 - *The stability and convergence with respect to*

global monotone dynamical systems with applications to the study of the equations in transition regime which appear in the optimization of an ecological energetic micro-system made from solar batteries, wind turbines and hydro-turbines (Stabilitate si convergenta relativ la sistemele dinamice global monotone cu aplicatii la studiul ecuatiilor de regim tranzitoriu ce intervin in optimizarea unui microsistem ecologic energetic format din baterii solare, turbine eoliene si turbine hidro) (Director: C. Bota).

PUBLISHED PAPERS

1. A.Aron, C. Țănaiasă, M.Puta, *Quadratic and homogeneous hamilton-poisson systems on $(so(3))^*$* , International Journal of Geometric Methods in Modern Physics, vol. 4, No. 7, pp. 1173-1186, ISSN 0219-8878
2. Gavruta P., *On the duality of fusion frames*, J. Math.Anal.Appl. 333, 2007, pp. 871-879, ISSN 0022-247X
3. R. Messina, M.A. Jivulescu, A. Messina, A. Napoli, *Riccati equation- based generalization of Dawson's integral function*, Mathematical Methods in the Applied Sciences, Vol. 30, No. 16, pp. 2055-2064, ISSN 0170-4214
4. M.A. Jivulescu, A. Messina, A. Napoli, F. Petruccione, *Exact treatment of linear difference equations with noncommutative coefficients*, Mathematical Methods in the Applied Sciences, Vol. 30, No. 16, pp. 2147-2153, ISSN 0170-4214
5. Cădăriu L., Radu V., *Fixed Points in Generalized Metric Spaces and the Stability of a Cubic Functional Equation*, Fixed Point theory and application 7, Nova Science Publ., pp. 53-68, Proceedings 8th International Conference on Nonlinear, South Korea, Aug. 09-13, ISBN 1-59454-877-3
6. R. Negrea, H. Carstea, A. Bercovici, *Controlling Stochastic Resonance in an Electronic Circuit with non-Gaussian Perturbations*, Proc. 30th Int. Spring Seminar on Electronics Technology (ISSE 2007), pp. 420-424, ISBN 1-4244-1218-8, IEEE Catalog

- Number: 07EX1780C, Library of Congress: 2007924573
7. Golet Ioan, *Approximation of Fuzzy Normed Space-Valued Functions*, AIP (American Institute of Physics) Conference 936 Proc. ICNAAM.2007 (Int. Conf. of the European Soc. of Comp. Meth. in Sc. and Eng. (ESCMSE), Greece, Proceedings of American Institute of Physics, ISBN 978-0-7354-0447-2 ISSN 0094-243X
 8. Goleț Ioan, *Some Remarks on Functions with Values in Probabilistic Normed Spaces*, *Mathematica Slovaca* 57, 2007, No. 3, pp. 1-12, Mathematical Institut, Slovak Academy of Sciences, Springer, ISSN 0139-9918
 9. Cadariu Liviu, Radu Viorel, *The Alternative of Fixed Point and Stability Results for Functional Equations*, *International Journal of Applied Mathematics & Statistics, IJAMAS*, Vol. 7, pp. 40-58, ISSN 0973-7545
 10. Dragomirescu Ioana, *Rayleigh number in a stability problem for a micropolar fluid*, *Turkish Journal of Mathematics*, 31 (2), 123-137, ISSN 1303-6149
 11. Boja Nicolae, *Movements of the non-Euclidean space generated by transvections*, *Bull. for Appl. and Comp. Math*, BAM #2295, vol. CX, pp. 01-06, ISSN 0133-3526
 12. Goleț Ioan, *On fuzzy normed spaces*, *Southeast Asian Bull. of Mathematics*, SEAMS 2007, Vol.32, No.2, Hong Kong, China, pp.245-254, ISSN 0129-2021
 13. Bînzar T., Pater F., *On the Wold-Slocinski's type decomposition of a pair of commuting semigroups of isometries*, *Bull. for Appl. and Comp. Math.*, Nr. 2314, vol. CX, Budapest, 145-148, ISSN 0133-3526
 14. Romeo Negrea, Ciprian Hedrea, Bogdan Caruntu, Nicolae Cofan, *On the regularity properties for a class of backwards stochastic differential equations*, *Bull. for Appl. and Comp. Math.*, Nr. 2308, vol. CX, Budapest, 095-105, ISSN 0133-3526
 15. Negrea R., Hedrea C., Cârstea H., Margeloiu D., *On a class of the Backward Stochastic Differential Equations and Control of Electronic Circuits*, *Bull. for Appl. and Comp. Math.*, Nr. 2315, vol. CX, Budapest, 149-156, ISSN 0133-3526
 16. Juratoni, A, *ρ -Semispectral Representations for Logmodular Algebras*, *Bull. for Appl. and Comp. Math.*, Nr. 2301, vol. CX, Budapest, 044-054, ISSN 0133-3526
 17. Aron Anania, Arieșanu Camelia, *Some remarks about numerical integrability on the Heisenberg Lie group $H(4)$ -I*, *Buletinul Stiintific al U.P.T., Seria Matematica-Fizica*, Tom 52(66), Fascicola 1, 7-12, ISSN 1224-6069
 18. Aron Anania, Arieșanu Camelia, *Some remarks about stability and integrability on the Heisenberg Lie group $H(3)$* ; *Buletinul Stiintific al U.P.T., Seria Mecanica*, Tom. 52(66), Fasc. 1, 7-10, ISSN 1224-6077
 19. Aron Anania, Arieșanu Camelia, *Integrability and stability problems about Maxwell-Bloch equations*; *Buletinul Stiintific al U.P.T., Seria Mecanica*, Tom. 52(66), Fasc.1, 1-6, ISSN 1224-6077
 20. Negrea Romeo, Căruntu Bogdan, *On a certain class of backward differential equations by McShane type*, *Analele Universitatii din Timisoara, Seria Matematică-Informatică*, Vol. 55, No.2, pp. 59-108, ISSN 1841-3293
 21. Crivăț Nicolae, *Almost Periodic Multifunctions with Values in Generalized Uniform spaces*, *Buletinul Stiintific al U.P.T., Seria Matematica-Fizica*, Tom 52(66), Fascicola 1, 69-75, ISSN 1224-6069
 22. R. Negrea, H. Carstea, *On Backward Differential Equations by McShane type*, *Bul. Stiint. Univ. Politehnica Timisoara, Ser. Mat-Fiz.*, Vol. 52 (60), No. 1, pp. 76-81, ISSN 1224-6069
 23. Juratoni Adina, Suciu Nicolae, *ρ -Semispectral Representations and Weakly Similarity*, *Analele Univ. de Vest Timisoara, Seria Matematică- Informatică*, Vol. 55, Fasc.1, pp. 253-277, ISSN 1841-3293
 24. Ene Remus, *Applications of the Biharmonic Equations to the Study of a Porous Plate*, *Analele Universitatii de Vest, Timisoara, Seria Matematica-Informatica*, Vol. 55, 1, 221-230, ISSN 1841-3293
 25. Cadariu Liviu, Radu Viorel, *Remarks on the stability of monomial functional equations*, *Fixed Point Theory*, No. 8(2), pp. 201-218, ISSN 1583-5022
 26. Ciprian Hedrea, *Some remarks on optimal control problem on R^3* , *Buletinul Stiintific al U.P.T., Seria Matematica-Fizica*, Tom 52(66), Fascicola 2, 40-43, ISSN 1224-6069
 27. Dragomirescu Ioana, *Analytical versus numerical results in a microconvection problem*, *Carpathian Journal*, 23 (1-2), 81-88, ISSN 1584-2851
 28. Petrișor Emilia, *On model maps of field lines in reversed shear configurations*, *Analele Univ. Craiova*, Vol. 17, pp. 111-118, ISSN 1223-6934

29. Boja N., *Movements of a pseudo-riemannian manifold generated by transvections*, Pannonian Applied Mathematical Meetings, 25-28 Oct. 2007, Arad-Oradea, ISSN 0133-3526.
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31. M. Marcu, S. Fuicu, A. Gîrban, M. Popa, *Experimental Test Cases for Wireless Positioning Systems*, IEEE Region 8 EUROCON 2007, pp. 530-537, ISBN: 978-1-4244-0813-9.
32. A.Aron, I. Casu, O. Chis, C. Hogeia, *Lax formulation and Kahan's integrator for some classical dynamical systems*, Conference on Differential Geometry, Lagrange and Hamilton Spaces, September, 3-7, Romania, pp.41-48, ISSN: 1221-8421.
33. A. Aron, C. Ariesanu, *Some remarks on $(sl(2,R))$ algebra*, Conference on Differential Geometry, Lagrange and Hamilton Spaces, September 3-7, pp.49-60, ISSN: 1221-8421.
34. Ene Remus, *Thermal Radiation Transport in a Thin Porous Plate*, International Conference on Theory and Applications of Mathematics and Informatics, August 30 - September 2, 2007, Alba Iulia, Romania, pp. 105-113, ISBN 978-973-1890-01-2.
35. R. Negrea, C. Carstea, D. Margeloiu, C. Hedrea, *On Backward Stochastic Differential Equations and Control of Electronic Circuits*, Proc. 1st Bio-Electromagnetic Compatibility, Timisoara, 25-26 May 2007, pp. 52-56, ISBN 978-973-718-753-6.
36. R. Negrea, *On a class of backward stochastic differential equations and applications to the stochastic resonance*, Proc. ASMDA 2007, may-june 2007, Chania, Greece, Recent Advances in Stochastic Modeling and Data Analysis, Editor Christos H. Skiadas, World Scientific 2007, pp. 26-33, ISBN (13)978-981-270-968-4, (10) 981-270968-1.
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38. Remus D. Ene, Adara M. Blaga, *Lagrangian formulation for the elasticity equations in the homogenous case*, NAV-MAR-EDU 2007, Conference, 15-17 november, Constanta, Romania, pp. 151-156, ISBN 978-973-8303-84-3, 978-973-8303-95-9.
39. A.Kovacs, *Boundary Element Method for Analyzing Fluid Movements in Network Profiles*, Proceedings 8th International Symposium on Computational Intelligence and Informatics, Budapest Tech 2007, nov. 15-17, pp. 139-150, ISBN 978 963 7154 652.
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14. Kyungpook Mathematical Journal 47 (1), pp. 91-103, 2007, ISSN 1225-6951
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17. Acta Mathematica Sinica, English Series 23 (2), pp. 321-326, 2007, ISSN 1439-8516
18. Bulletin of the Belgian Mathematical Society - Simon Stevin 14 (1), pp. 135-142, 2007, ISSN 1370-1444
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4. O. Lopovan, *Analiza matematica. Calcul diferential*, ed. a V-a, ISBN 973-824-750-0, Ed. Politehnica, 2007
5. Bânzaru T., Boja N., Kovacs A., Lipovan O., Babescu Gh., Găvruta P., Mihaș I., Rendi D., Angheliescu R., Milici C., D. Daianu, D. Paunescu, *Culegere de Probleme de Matematica pentru admitere*, Ed. Politehnica, 2007
6. R. Negrea, *Modelari Stocastice Aplicare in Finante*, Ed. Politehnica, Colectia Monografii, 2007, ISBN 978-970-625-535-9, 202 pp.
7. Florica-Ioana Dragomirescu, *Probleme spectrale in stabilitatea hidrodinamica*, Seria Matematica Aplicata si Industriala a Univ. Pit., No. 26, Editura Mirton, ISBN 978-973-52-0118-0, 190 pag.
8. L. Cadariu, *Stabilitate Ulam-Hyers-Bourgin pentru ecuatii functionale*, Editura Universitatii de Vest, Timisoara, 2007, ISBN 978-973-125-104-2, 205 pag.
9. Gh. Babescu, O. Bundau, A. Juratoni, A. Muresan, *Analiza Matematica Calcul Diferential si Integral*, Ed. Mirton, ISBN 978-973-52-0185-2; pg. 472.
10. Gh. Babescu, O. Bundau, A. Juratoni, A. Muresan, *Culegere de probleme de analiza matematica*, Ed. Mirton, ISBN 978-973-52-0223-1; pg. 282.

PERSPECTIVES

- 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 Maple.
- 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.

BOOKS

1. Lipovan O., Hedrea C., *Analiză matematică – îndrumător de seminar*, 3rd edition, Editura Politehnica Timișoara, 2007, 215 pg., ISBN (10)973-625-343-0; (13) 978-973-625-343-0;
2. Năslău P., Negrea R., Cădariu L., Căruntu B., Popescu D., Balmez M., Dumitrașcu C., *Matematici asistate de calculator*, 3rd edition, Ed. Politehnica, Timisoara, 2006, ISBN 973-625-234-5, 754 pg.;

- Deformation Geometry of material structure.
- Study the forward-backward stochastic differential equations and their applications to finance modelling
- Stochastic resonance phenomena and control of some electronics circuit s
- Participate at the conference and publish books.

RESEARCH TEAM

- Prof.Dr. Borislav CRISTICI
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- Prof.Dr. Octavian LIPOVAN
- Prof.Dr. Adalbert KOVÁCS
- Prof.Dr. Gheorghe BABESCU
- Prof.Dr. Pașc GĂVRUȚĂ
- Prof.Dr. Emilia PETRIȘOR
- Assoc.Prof.Dr. Dorina RENDI
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- Lecturer Dr. Constantin BOTA
- Lecturer Dr. Sorin LUGOJAN
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- Lecturer Dr. Camelia ARIEȘANU
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