

CURRICULUM VITAE

PERSONAL DATA:

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EDUCATION:

2002-2005: Ph.D. in Mathematics, "Docteur ès Sciences" (04.03.2005)

École Polytechnique Fédérale de Lausanne,
Lausanne, Switzerland

2001-2002: Predoctoral stage (01.10.2001-17.04.2002)

École Polytechnique Fédérale de Lausanne,
Lausanne, Switzerland

1999-2001: M.S. in Mathematics (2001),

West University of Timișoara, Faculty of Mathematics, Romania

1995-1999: B.S. in Mathematics (1999),

West University of Timișoara, Faculty of Mathematics, Romania

ACADEMIC EXPERIENCE:

2013- : Associate Professor, West University of Timișoara, Faculty of Mathematics and Computer Science, Department of Mathematics

2006-2013: Lecturer, West University of Timișoara, Faculty of Mathematics and Computer Science, Department of Mathematics

2003-2006: Teaching Assistant, West University of Timișoara, Faculty of Mathematics and Computer Science, Department of Mathematics

1999-2003: Instructor, West University of Timișoara, Faculty of Mathematics, Geometry Chair

RESEARCH INTERESTS:

- Differential, symplectic and Poisson geometry.
- Geometric mechanics.
- Dynamical systems.
- Bifurcation theory.
- Geometric control theory.

INVITED PROFESSOR:

- École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland (December 2008, December 2007, December 2006).
- Wilfrid Laurier University, Waterloo, Alberta, Canada (September 2007).
- Keio University, Yokohama, Japan (April/May 2007).

RESEARCH GRANTS AND CONTRACTS (team member):

INTERNATIONAL:

- **SCOPES:** *Applied symplectic geometry and modeling of materials*, **Swiss National Science Foundation project number: IB7320-110721**, 01.10.2005 – 31.03.2008.
- **MASIE:** *Mechanics and symmetry in Europe: the geometry and dynamics of deformable systems*, **EU project number: HPRN-CT-2000-00113**, 01.06.2000 – 30.11.2004.

NATIONAL:

- **Research Grant PN-II-RU-TE-2011-3-0103:** *Asymptotic and geometric properties of dynamical systems with applications in control theory*, 2011– 2014.
- **Exploratory Research Grant PN 2 ID 1081 code 550/2009:** *Qualitative properties of dynamical systems and applications to control theory*, 2009– 2011.
- **Research Grant CNCSIS AT 60/2007:** *Advanced studies on qualitative aspects in the theory of control systems and applications*, 2007 – 2008.
- **Excellence Research Grant CEEEX ET 3/2006:** *Asymptotic behavior of variational systems and applications in control theory*, 2006 – 2008.

EDITORIAL ACTIVITIES:

- *International Journal of Theoretical and Mathematical Physics*, Scientific & Academic Publishing, USA, p-ISSN: 2167-6844, e-ISSN: 2167-6852, <http://journal.sapub.org/ijtmp>, **editorial board member**, (07.05.2012-)
- *Annals of West University of Timișoara - Mathematics and Computer Science*, Online ISSN: 1841-3307, <http://www.degruyter.com/view/j/awutm>, **managing editor**, (2011-)

SCIENTIFIC REFEREE:

- *Acta Applicandae Mathematicae*, Springer
- *Applied Mathematics and Computation*, Elsevier
- *Chaos, Solitons & Fractals*, Elsevier
- *Journal of Geometric Mechanics*, American Institute of Mathematical Sciences
- *Mathematics and Computers in Simulation*, Elsevier
- *Nonlinear Analysis: Real World Applications*, Elsevier
- *Nonlinear Dynamics*, Springer
- *Physics Letters A*, Elsevier
- *Proceedings of the Royal Society A*, Royal Society Publishing

PAPERS PUBLISHED IN:

1. ISI classified journals:

- A stability criterion for non-degenerate equilibrium states of completely integrable systems, *Journal of Differential Equations*, 263(10)(2017), 6731-6763.
- Asymptotic stabilization with phase of periodic orbits of three-dimensional Hamiltonian systems, *Journal of Geometry and Physics*, 121(2017), 33-41.
- Bifurcations of limit cycles of perturbed completely integrable systems, (with A. Gîrban), *Nonlinearity*, 30(3)(2017), 1058-1088.
- A method to generate first integrals from infinitesimal symmetries, *Mediterr. J. Math.*, 13(1)(2016), 249-262.
- On the control of stability of periodic orbits of completely integrable systems, *J. Geom. Mech.*, 7(1)(2015), 109-124.
- Affine distributions on Riemannian manifolds with applications to dissipative dynamics, *J. Geom. Phys.*, 92(2015), 55-68.
- The free rigid body dynamics: Generalized versus classic, *J. Math. Phys.*, 54(7)(2013), 072704.
- Explicit Hamiltonian realizations of non-degenerate three-dimensional real linear differential systems, *Appl. Math. Lett.*, 26(10)(2013), 1031-1034.
- Complete integrability versus symmetry, *J. Math. Phys.*, 53(12)(2012), 122701.
- On a class of three dimensional quadratic Hamiltonian systems, *Appl. Math. Lett.*, 25(9)(2012), 1214-1216.
- On the completely integrable case of the Rössler system, (with A. Gîrban), *J. Math. Phys.*, 53(5)(2012), 052701.
- On a Hamiltonian version of a three dimensional Lotka-Volterra system, (with A. Gîrban), *Nonlinear Analysis: Real World Applications*, 13(5)(2012), 2304-2312.
- A normal form of completely integrable systems, *J. Geom. Phys.*, 62(5)(2012), 1167-1174.
- Non-Noether conservation laws, (with P. Birtea), *Int. J. Geom. Methods Mod. Phys.*, 9(4)(2012), 1220004.
- New aspects on the geometry and dynamics of quadratic Hamiltonian systems on $(\mathfrak{so}(3))^*$, (with C. Dăniasă, A. Gîrban), *Int. J. Geom. Methods Mod. Phys.*, 8(8)(2011), 1695-1721.
- On the Hamiltonian dynamics and geometry of the Rabinovich system, (with A. Gîrban), *Discrete and Continuous Dynamical Systems - Series B*, 15(3)(2011), 789-823.
- A Hamiltonian look at the Rikitake two-disk dynamo system, (with A. Gîrban), *Nonlinear Analysis: Real World Applications*, 11(4)(2010), 2888-2895.
- Bi-Hamiltonian structure of the Kawachi equations, (with A. Gîrban), *Int. J. Geom. Methods Mod. Phys.*, 7(4)(2010), 625-629.
- On a Hamiltonian version of the Rikitake system, (with A. Aron, Şt. Nicoară), *SIAM J. Appl. Dyn. Syst.*, 8(1)(2009), 454-479.
- On 3d Hamiltonian systems via Darboux-Weinstein coordinates, (with R.A. Tudoran), *Int. J. Geom. Methods Mod. Phys.*, 6(3)(2009), 451-459.
- On a large class of three-dimensional Hamiltonian systems, (with R.A. Tudoran), *J.*

- Math. Phys.*, 50(1)(2009), 012703.
- Some remarks on the dynamics and geometry of an underwater vehicle, (with P. Birtea, M. Puta), *Int. J. Geom. Methods Mod. Phys.*, 5(6)(2008), 831-849.
 - Some remarks on the dynamics of the underwater vehicle, (with P. Birtea, M. Puta), *Bull. Sci. Math.*, 131(7)(2007), 601-612.
 - Some remarks on the Hererra-Hojman system, (with M. Puta, R.A. Tudoran, M. Boleanțu), *Int. J. Geom. Methods Mod. Phys.*, 4(6)(2007), 919-925.
 - Asymptotic stability for a class of metriplectic systems, (with P. Birtea, M. Puta, M. Boleanțu), *J. Math. Phys.*, 48(8)(2007), 082703.
 - Periodic orbits in the case of a zero eigenvalue, (with P. Birtea, M. Puta), *C.R. Math. Acad. Sci. Paris*, 344(12)(2007), 779-784.
 - Controllability problems in the charged top dynamics, (with P. Birtea, M. Puta, C. Voicu), *Systems & Control Lett.*, 56(7-8)(2007), 512-515.
 - Stability, periodic solutions and numerical integration in the Kowalevski top dynamics, (with A. Aron, P. Birtea, M. Puta, P. Șușoi), *Int. J. Geom. Methods Mod. Phys.*, 3(7)(2006), 1323-1330.
 - On the symmetry breaking phenomenon, (with P. Birtea, M. Puta, T.S. Rațiu), *Int. J. Geom. Methods Mod. Phys.*, 3(4)(2006), 697-718.
 - Symmetry breaking for toral actions in simple mechanical systems, (with P. Birtea, M. Puta, T.S. Rațiu), *J. Diff. Equations*, 216 (2005), 282-323.
 - A short proof of chaos in an atmospheric system, (with P. Birtea, M. Puta, T.S. Rațiu), *Phys. Lett. A*, 300(2-3)(2002), 189-191.
 - Controllability, stability and the n-dimensional Toda lattice, (with M. Puta), *Bull. Sci. Math.*, 126(3)(2002), 241-247.

2. refereed journals indexed in databases:

- On some asymptotic properties of the Rössler dynamical system, (with A. Gîrban), *Stud. Univ. Babeș-Bolyai Math.*, 58(2013), No. 4, 503-509.
- Dissipative perturbations of quadratic Hamiltonian systems on $(\mathfrak{so}(3))^*$, (with C. Dăniașă), *An. Univ. Timisoara Ser. Mat.-Inform.*, 48(2010), fasc. 2, 159-171.
- Poisson manifolds and Bermejo-Fairén construction of Casimirs, (with R.A. Tudoran, M. Puta), *Tensor, N. S.*, 66(1)(2005), 59-70.
- Some remarks on the rigid body dynamics in a central gravitational field, (with I. Cașu, I. Ioja, M. Puta), *An. Univ. Timisoara Ser. Mat.-Inform.* (Special Issue: Mathematics), 39(2001), 365-376.

3. proceedings of international conferences:

- The underwater vehicle dynamics with a fixed control authority, (with A. Aron, P. Birtea, L. Dobre, M. Puta), 55-61, *Modern Trends in Geometry and Topology*, Editors: D. Andrica, P. A. Blaga, S. Moroianu, Cluj University Press, 2006, The 7th International Workshop on Differential Geometry and its Applications, Deva, September 5th-September 11th 2005.
- The special Euclidean group $SE(2)$, 281-284, *Proceeding of the Fourth International Workshop on Differential Geometry*, 16-22 September 1999, Brașov, Romania, Editors: G. Pitiș, G. Munteanu, Transilvania University Press, 2000.

4. proceedings of national conferences:

- The Exponential Map on $SO(4)$, (with P. Birtea, M. Puta), 322-327, Proceedings of The 9th National Conference of The Romanian Mathematical Society, 6-7 May, Lugoj, Romania, 2005, Ed. Universităţii de Vest, 2005.

5. preprints:

- Some remarks on the controllability of the Lie-Poisson reduced dynamics , (with P. Birtea, M. Puta), Preprint Series of Università degli Studi di Roma “La Sapienza”, December 2000.
- Control, integrability and stability in some concrete mechanical problems on matrix Lie groups, (with P. Birtea, M. Puta, C. Lăzureanu, C. Pop), Preprint Series of Università degli Studi di Roma “La Sapienza”, December 1998.

BOOKS AND CHAPTERS IN BOOKS:

- Echilibre, Orbite Periodice și Stabilitate Lyapunov, Ed. Politehnica, Timișoara, 2012.
- Geometria Metrică a Conicelor și Cuadricelelor, (with A. Girban), Ed. Politehnica, Timișoara, 2012.
- Geometric Mechanics and Symmetry: the Peyresq Lectures; Chapter II: A Crash Course in Geometric Mechanics (with T.S. Rațiu, L. Sbano, E. Sousa Dias, G. Terra), pag. 23-156, London Mathematical Society Lecture Note Series, Vol. 306, Cambridge University Press, 2005.
- Symmetry breaking in mechanical systems, These No. 3196(2005), École Polytechnique Fédérale de Lausanne, 2005, Lausanne, Switzerland, doi: 10.5075/epfl-thesis-3196.
- Forme diferențiale exterioare. Probleme, (with P. Birtea, M. Puta), Editura Mirton, Timișoara, 1999.

ADDRESSES AT CONFERENCES:

- Conferința "Diaspora în Cercetarea Științifică și Învățământul Superior din România - Diaspora și prietenii săi" 2016, Workshop: Sisteme dinamice. Teorie și aplicații, Universitatea de Vest din Timișoara, 23-28 Aprilie 2016, Timișoara, România.
- The XXIIIth International Conference on Integrable Systems and Quantum Symmetries (ISQS-23), Czech Technical University Prague, 23-27 June 2015, Prague, Czech Republic.
- Geometry and Physics Seminar, Department of Theoretical Physics, National Institute of Physics and Nuclear Engineering (IFIN-HH), 25 July 2014, Măgurele, România.
- 2nd International Eurasian Conference on Mathematical Sciences and Applications (IECMSA - 2013), 26 - 29 August, 2013, Sarajevo, Bosnia and Herzegovina.
- Geometry and PDE's, Zilele Academice Timișene 2013, Ediția a XIII-a, 23-24 May, 2013, Universitatea de Vest din Timișoara, Timișoara, Romania.
- Encuentro de Geometría Diferencial, satellite congress of "IV Congreso Latinoamericano de Matemáticos", July 31 – August 3, 2012, Universidad Nacional de Rosario, Rosario, Argentina.
- ICIAM 2011 - 7th International Congress on Industrial and Applied Mathematics, 18-22 July, 2011, Vancouver Convention Center, Vancouver, BC, Canada.

- Geometry, Mechanics, and Dynamics: A Workshop celebrating the 60th Birthday of Tudor Ratiu, 12-16 July, 2010, CIRM, Marseille - Luminy, France.
- PRIMA 2009, Pacific Rim Mathematical Association (PRIMA) Congress, 6-10 July, 2009, University of New South Wales, Sydney, Australia.
- Zilele Academice Timișene 2009, Ediția a XI-a, 29 May, 2009, Universitatea de Vest din Timișoara, Timișoara, Romania.
- Poisson 2008. Poisson geometry in mathematics and physics, 7-11 July, 2008, École Polytechnique Fédérale de Lausanne, Switzerland.
- Dynamical Integrability, November 27-December 1st, 2006, CIRM, Marseille-Luminy, France.
- School on Poisson Geometry and Related Topics, May 31-June 2, 2006, Keio University, Hiyoshi Campus, Raio-Sha, Yokohama, Japan.
- Poisson Geometry in Mathematics and Physics, 5-9 June, 2006, Tokyo, Japan.
- The 7th International Workshop on Differential Geometry and its Applications, 5- 11 September, 2005, Deva, Romania.
- Summer School and Conference in Poisson Geometry, 4-22 July, 2005, ICTP, Trieste, Italy.
- The 9th National Conference of The Romanian Mathematical Society, 6-7 May, 2005, Lugoj, Romania.
- The 7-th International Conference of Tensor Society, 23-27 August, 2004, Timișoara, Romania.
- Geometric Mechanics and its Applications, MASIE, 12-16 July, 2004, Centre Bernoulli, École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland.
- MRI Spring School 2004, Lie Groups in Analysis, Geometry and Mechanics, 3-25 June, 2004, Utrecht, The Netherlands.
- Young European Researchers in Mechanics Meeting 2004 (YERM), Instituto Superior Técnico, 13-17 January, 2004, Lisbon, Portugal.
- Geometry, Symmetry and Mechanics III, 5-10 May, 2003, Institut d'Etudes Scientifiques de Cargèse, Cargèse, Corse, France.
- Dynamical Systems Methods in Fluid Mechanics, July 28 – August 3, 2002, Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany.
- Symmetry and Perturbation Theory (SPT 2002), 19-26 May, 2002, Cala Gonone, Sardegna, Italy.
- MASESS II, Mechanics and Symmetry Euro Summer School, 2-15 September, 2001, Peyresq, France.
- MASESS I, Mechanics and Symmetry Euro Summer School, 3-16 September, 2000, Peyresq, France.
- The Fourth International Workshop on Differential Geometry and its Applications, 16-22 September, 1999, Brașov, Romania.
- The Eleventh National Seminar of Finsler and Lagrange Geometry, 16-20 February, 2000, Bacău, Romania.