

Curriculum Vitae (October 2019)

Adriana BUICĂ (Drăgășani, November 25, 1971)

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Languages: Romanian, English, Spanish (written/spoken), Catalan, French, Italian (read)

ACADEMIC POSITIONS

Since 1995 I am working in the Department of Mathematics at Babeș-Bolyai University, in the following positions: Associate Professor (since February 2007); Lecturer (January 2002 – January 2007); Teaching Assistant (October 1995 – January 2002)

RESEARCH INTERESTS

Qualitative Theory of Differential Equations, Dynamical Systems, Operator Theory
Periodic Solutions, Bifurcations, Averaging Methods

STUDIES AND DEGREES

2014 Habilitation in Mathematics, Babeș-Bolyai University

2000 PhD in Mathematics, Babeș-Bolyai University

1995 Licensed in Mathematics, Babeș-Bolyai University, Cluj-Napoca

1990 Secondary School Drăgășani

RESEARCH VISITS (longer than 3 months)

2008 (3 months) Universitat de Lleida, Spain, MCYT/FEDER Grant

2007/2008 (5 months) Universitat de Lleida, Spain, Visiting Professor position

2005/2006 (10 months) Universitat Autònoma de Barcelona, Spain, AUF grant

2003/2004 (18 months) Centre de Recerca Matemàtica, Barcelona, Spain, MECD grant

SHORT RESEARCH VISITS

2019 (two weeks) Shanghai Jiao Tong University, China
2018, 2016, 2015, 2014, 2013, 2012, 2010, 2009 (few weeks) Universitat de Lleida, Spain
2016, 2011, 2008, 2007, 2005, 2004 (few weeks) Universitat Autònoma de Barcelona, Spain
2015 (two weeks) Plymouth University, United Kingdom
2011 (two weeks) Imperial College London, United Kingdom
2008 (one week) UNED Madrid, Spain
2007 (one week) Universidad de Granada, Spain
2005 (two months) University of Würzburg, Germany, DAAD grant
2003 (one month) Institut Henri Poincaré, Paris, France, ERCOM exchange

PUBLICATIONS

Articles

1. A. Buică, J. Giné, M. Grau, On the critical points of the flight return time function of perturbed closed orbits, *J. Differential Equations* 266 (2019) 8344-8369.
2. A. Buică, Perturbed normalizers and Melnikov functions, *J. Math. Anal. Appl.* 464 (2018) 266-273.
3. A. Buică, On the equivalence of the Melnikov functions method and the averaging method, *Qual. Theory Dyn. Syst.* 16 (2017) 547-560.
4. A. Buică, I. A. García, Inverse Jacobi last multipliers and first integrals for nonautonomous differential systems, *Z. Angew. Math. Phys.* 66 (2015), 573-585.
5. A. Buică, J. Giné, M. Grau, Essential perturbations of polynomial vector fields with a period annulus, *Comm. Pure Appl. Anal.* 14 (2015) 1073-1095.
6. A. Buică, J. Llibre, O. Makarenkov, A note on forced oscillations in differential equations with jumping nonlinearities, *Differ. Equ. Dyn. Syst.* 23 (2015) 415-421.
7. A. Buică, I. A. García, S. Maza, Multiple Hopf bifurcation in \mathbb{R}^3 and inverse Jacobi multipliers, *J. Differential Equations* 256 (2014) 310-325.
8. A. Buică, J. Giné, J. Llibre, Periodic solutions for nonlinear differential systems: the second order bifurcation function, *Topol. Methods Nonlinear Anal.* 43 (2014) 403-419.
9. A. Buică, I. A. García, S. Maza, Some remarks on inverse Jacobi multipliers around Hopf singularities, *J. Math. Anal. Appl.* 418 (2014) 1074-1083.

10. A. Buică, I. A. García, S. Maza, Centers in a quadratic system obtained from a scalar third order differential equation, *Differential and Difference Equations with Applications*, Springer Proceedings in Mathematics & Statistics, 47 (2013).
11. A. Buică, I. A. García, S. Maza, Inverse Jacobi multipliers: recent applications in dynamical systems, *Progress and Challenges in Dynamical Systems*, Springer Proceedings in Mathematics & Statistics, 54 (2013) 127-141.
12. A. Buică, I. A. García, S. Maza, Existence of inverse Jacobi multipliers around Hopf points in \mathbb{R}^3 : emphasis on the center problem, *J. Differential Equations* 252 (2012) 6324-6336.
13. A. Buică, R. Ortega, Persistence of equilibria as periodic solutions of forced systems, *J. Differential Equations* 252 (2012) 2210-2221.
14. A. Buică, J. Llibre, O. Makarenkov, Bifurcations from nondegenerate families of periodic solutions in Lipschitz systems, *J. Differential Equations* 252 (2012) 3899-3919.
15. A. Buică, J. Giné, J. Llibre, A second order analysis of the periodic solutions for nonlinear periodic differential systems with a small parameter, *Physica D* 241 (2012) 528-533.
16. A. Buică, J. Giné, J. Llibre, Bifurcation of limit cycles from a polynomial degenerate center, *Adv. Nonlin. Stud.* 10 (2010) 597-609.
17. A. Buică, I. A. García, Periodic solutions of perturbed symmetric Euler top, *Topol. Methods Nonlinear Anal.* 36 (2010) 91-100.
18. A. Buică, J. Llibre, O. Makarenkov, Asymptotic stability of periodic solutions for non-smooth differential equations with application to the nonsmooth van der Pol oscillator, *SIAM J. Math. Anal.* 40 (2009) 2478-2495.
19. A. Buică, J. Llibre, O. Makarenkov, To Mitropolskii Yu. A. theorem on periodic solutions of systems of nonlinear differential equations with non-differentiable right-hand-sides (Russian), *Dokl. Acad. Nauk.* 421 (2008) 302-304.
20. A. Buică, Contributions to coincidence degree theory of asymptotically homogeneous operators, *Nonlin. Anal.* 68 (2008), 1603-1610.
21. A. Buică, A. Gasull, J. Yang, The third order Melnikov function of a quadratic center under quadratic perturbations, *J. Math. Anal. Appl.* 331 (2007) 443-454.
22. A. Buică, V. A. Ilea, Periodic solutions for mixed functional differential equations, *J. Math. Anal. Appl.* 330 (2007) 576-583.

23. A. Buică, A. Daniilidis, Stability of periodic solutions for Lipschitz systems obtained via the averaging method, *Proc. Amer. Math. Soc.* 135 (2007) 3317-3327.
24. A. Buică, J.-P. Francoise, J. Llibre, Periodic solutions for nonlinear periodic differential systems with a small parameter, *Commun. Pure Appl. Anal.* 6 (2007) 103-111.
25. A. Buică, J. Llibre, Limit cycles of a perturbed cubic polynomial differential center, *Chaos, Solitons Fractals* 32 (2007) 1059-1069.
26. J. Appell, A. Buică, Numerical ranges for pairs of operators, duality mappings with gauge function, and spectra of nonlinear operators, *Mediterr. J. Math.* 3 (2006) 1-14.
27. A. Buică, Radu Precup, Note on the abstract generalized quasilinearization method, *Rev. anal. numér. théor. approx.* 35 (2006) 11-15.
28. A. Buică, J. Llibre, Bifurcation of limit cycles from a 4-dimensional center in control systems, *Internat. J. Bifur. Chaos Appl. Sci. Engrg.* 15 (2005) 2653-2662.
29. A. Buică, Quasilinearization method for nonlinear elliptic boundary value problems, *J. Optim. Theory Appl.* 124 (2005) 323-338.
30. A. Buică, J. Llibre, Averaging methods for finding periodic orbits via Brouwer degree, *Bull. sci. math.* 128 (2004) 7-22.
31. A. Buică, Existence of strong solutions of fully nonlinear elliptic equations, *Analysis and optimization of differential systems*, (V. Barbu, I. Lasiecka, D. Tiba and C. Varsan, eds.), Kluwer Acad. Publ. Boston, (2003) 69-77.
32. A. Buică, Some remarks on monotone iterative technique, *Rev. Anal. Numér. Théor. Approx.* 31 (2002) 147-154.
33. A. Buică, Gronwall-type nonlinear integral inequalities, *Mathematica (Cluj)* 44(67) (2002) 19-23.
34. A. Buică, A. Domokos, Nearness, accretivity and the solvability of nonlinear equations, *Numer. Funct. Anal. Optim.* 23 (2002) 477-493.
35. A. Buică, Existence results for evolution equations via monotone iterative techniques, *Dyn. Cont. Discrete Impul. Syst. (A: Math. Anal.)* 9(2002) 487-499.
36. A. Buică, R. Precup, Abstract generalized quasilinearization method for coincidences, *Nonlinear Stud.* 9(2002) 371-386.

37. A. Buică, Monotone iterations for the initial value problem, *Seminar on Fixed Point Theory Cluj-Napoca* 3(2002) 137-148.
38. A. Buică, R. Precup, Monotone Newton-type iterations for nonlinear equations, *Proc. Tiberiu Popoviciu Itinerant Seminar Funct. Eqn. Approx. Convexity* (E. Popoviciu ed.), Cluj-Napoca, (2002) 63-75.
39. A. Buică, Quasilinearization for the forced Duffing equation, *Studia Univ. Babeş-Bolyai (Mathematica)* 47(2002) 21-29.
40. A. Buică, Some properties preserved by weak-nearness, *Semin. Fixed Point Theory Cluj-Napoca* 2 (2001) 65-70.
41. A. Buică, Strong surjections and nearness, *Recent trends in nonlinear analysis* (Jürgen Appell, ed.), Progr. Nonlinear Differential Equations Appl. 40 (2000), Birkhäuser, Basel, 55-58.
42. A. Buică, Some remarks on coincidence theory, *Studia Univ. Babeş-Bolyai (Mathematica)* 45 (2000) 39-47.
43. A. Buică, Contributions to coincidence degree theory of some homogeneous operators, *Pure Math. Appl.* 11 (2000) 153-159.
44. A. Buică, Elliptic and parabolic differential inequalities, *Demonstratio Math.* 33 (2000) 783-792.
45. A. Buică, Data dependence theorems on coincidence problems, *Studia Univ. Babeş-Bolyai (Mathematica)* 41 (1996) 33-40.
46. A. Buică, Existence and continuous dependence of solutions of some functional-differential equations, *Seminar on Fixed Point Theory*, 3 (1995), 1-13.
47. A. Buică, On the Cauchy problem for a functional-differential equation, *Seminar on Fixed Point Theory*, 3 (1993) 17-19.

Books

1. A. Buică, *Periodic solutions for nonlinear systems*, Presa Universitară Clujană, Cluj-Napoca, 2006.
2. A. Buică, *Principii de coincidență și aplicații*, Presa Universitară Clujană, Cluj-Napoca, 2001.

TEACHING ACTIVITY

I have been teaching the following subjects (theory and problems) since 1995: Calculus, Ordinary Differential Equations, Dynamical Systems, Sobolev Spaces, Partial Differential Equations, Biomathematics, Fixed Point Theory

MEMBER IN DOCTORAL COMMITTEES

2015 Rizgar Hagi, Plymouth University (United Kingdom)
2013 Oana Maria Mleşnişte, Babeş-Bolyai University (Romania)
2013 Elísabet Vela, Universidad de Sevilla (Spain)
2010 Cecilia Crăciun, Babeş-Bolyai University (Romania)
2010 Mircea Rus, Babeş-Bolyai University (Romania)
2008 Susanna Maza, Universitat de Lleida (Spain)

MEMBER IN INTERNATIONAL RESEARCH TEAMS

2018-2020 MTM2017-84383-P (MICINN, Spain); Director: Prof. Dr. M. Grau
Orbitas periódicas e integrabilidad en sistemas diferenciales continuos
2015-2017 MTM2014- 53703-P (MICINN, Spain); Director: Prof. Dr. M. Grau
Métodos cualitativos en sistemas diferenciales continuos
2012-2014 MTM2011-22877 (MICINN, Spain) ; Director: Prof. Dr. I. A. García
Bifurcaciones, integrabilidad y propiedades cualitativas de familias de campos vectoriales
2010-2012 Grant 2009SGR381 (CIRIT, Catalonia) ; Director: Prof. Dr. J. Giné
Métodos cualitativos en las ecuaciones diferenciales
2009-2011 MTM2008-00694 (MCYT, Spain); Director: Prof. Dr. J. Giné
Métodos cualitativos e integrabilidad en las ecuaciones diferenciales en el plano

MEMBER IN NATIONAL RESEARCH TEAMS

2012-2018 PN-II-ID-PCE-2011-3-0094; Director: Prof. Dr. Radu Precup
Metode operatoriale pentru sisteme neliniare şi aplicaţii
2005-2008 CNCSIS 187/2005-2008; Director: Prof. Dr. Adrian Petruşel
Sisteme dinamice
2004-2006 CNCSIS 345/2004-2006; Director: Prof. Dr. Radu Precup
Operatori neliniari şi ecuaţii cu derivate parţiale
2001-2002 ANSTI A09/2001; Director: Lect. Dr. Andras Domokos
Analiza matematică a unor procese evolutive cu memorie
2000-2003 CNCSIS 261/2000 351/2001; Director: Prof. Dr. Radu Precup
Probleme neliniare cu valori pe frontieră şi aplicaţii
1999-2001 BM 159/1999-2001; Director: Prof. Dr. Ioan A. Rus
Operatori neliniari şi ecuaţii diferenţiale

EDITOR, REVIEWER, EVALUATOR

Managing Editor at *Fixed Point Theory* (since 2000);
Reviewer for Mathematical Reviews and Zentralblatt MATH;
External evaluator of a scientific project for FONDECYT (Fondo Nacional de Desarrollo Científico y Tecnológico) Chile;
Referee at various mathematical journals

ORGANIZATION OF INTERNATIONAL MEETINGS

Member in the Organizing Committee of the "International Conference on Nonlinear Operators, Differential Equations and Applications", in July 2015, July 2011, July 2007, August 2004, Cluj-Napoca, Romania;

Co-organizer of the special session "Periodic solutions for dynamical systems" within "The 10th AIMS Congress on Dynamical Systems, Differential Equations and Applications", July 2014, Madrid, Spain.

TALKS IN SEMINARS AND CONFERENCES

Talks in international conferences

International Conference on Difference Equations and Applications, 24-28 July 2017, Timișoara, Romania

Fourth symposium on planar vector fields, 5-9 September 2016, Lleida, Spain

International Conference on Nonlinear Operators, Differential Equations and Applications, 14-17 July 2015, Cluj-Napoca, Romania

Congreso Real Sociedad Matemática Española, 2-6 February 2015, Granada, Spain

Workshop on slow-fast dynamics: theory, numerics, applications to life and earth sciences, 3-7 June 2013, Barcelona, Spain

New trends in dynamical systems, 1-5 October 2012, Salou, Spain

International Conference on Differential Equations (EquaDiff 2011), 1-5 August 2011, Loughborough, United Kingdom

International Conference on Nonlinear Operators, Differential Equations and Applications, 5-8 July 2011, Cluj-Napoca, Romania

Dynamical Days, 4-6 November 2010, Calatayud, Spain

Third symposium on planar vector fields, Universitat de Lleida, Spain, 2010.

Singularités des champs de vecteurs du plan. Bifurcations et applications, Centre International de Rencontres Mathématiques, 2009, Marseille, France

Workshop on Resonance Oscillations and Stability of Nonsmooth systems, 16-25 June, Imperial College London, United Kingdom

Mathematical Models in Engineering, Biology and Medicine. Conference on Boundary Value Problems, 16-19 September 2008, Santiago de Compostela, Spain

International Conference Semicentennial Tiberiu Popoviciu Institute of Numerical Analysis, 7-10 May 2008, Cluj-Napoca, Romania

International Conference on Nonlinear Operators, Differential Equations and Applications, July 2007, Cluj-Napoca, Romania

International Conference on Topological Methods, Differential Equations and Dynamical Systems, 13-16 June 2007, Firenze, Italy

International Conference on Nonlinear Operators, Differential Equations and Applications, August 2004, Cluj-Napoca, Romania

NoLineal, June 2004, Toledo, Spain

Recent Trends in Dynamics, July 2003, Porto, Portugal

Third International Conference on Applied Mathematics, October 2002, Baia-Mare, Romania

Theodor Anghelută Conference, June 2002, Băișoara, Cluj, Romania

4^{ème} Colloque Franco-Roumain de Mathématiques Appliquées, September 1998, Metz, France
Students Conference, April 1995, Gödölö, Hungary.

Seminar Talks:

Shanghai Jiao Tong University, China, September 11, 2019

Universidad de Sevilla, Spain, July 2013

Imperial College London, United Kingdom, July 2011

UNED Madrid, Spain, 2008

Universitat Autònoma de Barcelona, Spain, 2007, 2006, 2005, 2004, 2003

Universidad de Granada, Spain, 2007

Universitat de Lleida, Spain, 2007

University of Stuttgart, Germany, 2005

University of Würzburg, Germany, October 2000.