

CURRICULUM VITAE

Nicoleta-Corina Babalic

Contact information

University of Craiova
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Education

2011 – Sept. 2014: Ph.D. student, University of Craiova, Romania

Coordinator: prof. univ. dr. Radu Constantinescu, University of Craiova

Adviser: prof. Stefan Adrian Carstea, senior researcher at IFIN-HH, Bucharest-Magurele

Research theme: *"Integrable nonlinear systems and solitonic phenomenology"*

2005: M.S. (Quantum Field Theory), University of Craiova, Romania

Dissertation: *„Neutrino oscillations”*

Coordinator: prof. univ. dr. Mihai Visinescu, senior researcher at IFIN-HH, Bucharest-Magurele

2004: B.S. (Physics), University of Craiova, Romania

Graduation thesis: *„Saturated absorption and induced transparency. Linear and nonlinear absorption phenomena”*, Supervisor: prof. univ. dr. Uliu Florea, University of Craiova

2000: Baccalaureate diploma, Nicolae Titulescu High School, Mathematics-Physics profile, Craiova, Romania

Research experience

Febr 2017 – present: Teaching Assistant, Faculty of Science, Department of Physics, Univ. of Craiova

October 2016 – Febr 2017: Associate Professor and Research Associate, University of Craiova

March 2016 – March 2017: Postdoctoral Research Assistant, National Institute of Physics and Nuclear Engineering (IFIN-HH), Bucharest-Magurele, Romania

Sept. 1, 2012 – Dec. 2015: Research Assistant, National Institute of Physics and Nuclear Engineering, IFIN-HH, Bucharest-Magurele, Romania

2011 – Sept. 2014: Ph. D. student, University of Craiova, Romania

Funding

2019 – present - POCU/379/6/21, ID PROJECT: 125094, expert

2020 – 2021 - H2020-MSCA-NIGHT-2020, European Researcher’s Night, project team member

2020 – 2021 - Subproject ROSE, Grant nr. AG361/SGU/SS/III, expert

2019 – 2020 - POCU380/6/13/123990, postdoctoral grant

2018 – 2018 - Project “A chance for development”, e-MS code: ROBG-176, Expert (March)

2018 – 2018 - Summer school – “Physics in Romania: Science and Culture”, PHYS 2212s (June-July)

2018 – 2019 - H2020, HSciRO, ID: 818795, European Researcher’s Night, project team member

2017 – 2019 - Subproject ROSE, Grant nr. 26/SGU/NC/I, Expert

2017 – 2019 - ROSE, Grant nr. 12/SGU/PV/I/06.07.2017, Expert

2014 – 2014 - „Dynamical Systems and their applications”, cod PIRSES-GA-2012 (Marie Curie Actions, People International Research Staff Exchange Scheme) 01/10/2012- 30/09/2016 (Febr - Apr)

2014 - 2015 - POSDRU/159/1.5/S/133255, Project ID 133255 (2014)

2011 - 2015 – Fundamental Physics Education of quantum information and nonlinear optics for cycles of solitons, IFIN-HH, Magurele Bucharest, project IDEI, PN-II-ID-PCE-2011-3-0083 (MECTS)

Publications

- Corina N. Babalic, **Hirota bilinear method for constructing integrable discretizations of semidiscrete solitonic equations**, Physics AUC, (In Press).
- Corina N. Babalic, **The soliton solutions for semidiscrete complex mKdV equation**, 03002, ITM Web of Conferences, Vol. 34 (2020).
- Corina N. Babalic, **Integrable discretisations of Volterra system with multiple branches of dispersion**, Modern Physics Letters B, <https://doi.org/10.1142/S0217984921500974> (2020).
- Corina N. Babalic, **Complete integrability and complex solitons for generalized Volterra system with branched dispersion**, Int. Journal of Modern Physics B, 34 (29) 2050274, (2020).
- C. N. Babalic, A.S. Carstea, **Bilinear approach to supersymmetric AKNS system; multiple dressing of fermionic amplitudes**, Modern Physics Letters A, 2050143, (2020).
- Corina N. Babalic, **Fermionic extensions of KdV equation**, Physics AUC, 28, (2018).
- Corina N. Babalic, **“Integrable discretisation of coupled Ablowitz-Ladik equations with branched dispersion”**, Romanian Journal of Physics 63, 114 (2018).
- N. C. Babalic, A. S. Carstea, **“Bilinear approach to Kuperschmidt super-KdV type equations”**, Journal of Physics A: Mathematical and Theoretical, 51 (2018) 225204.
- N. C. Babalic, A. S. Carstea, **“Coupled Ablowitz-Ladik equations with branched dispersion”**, Journal of Physics A: Mathematical and Theoretical, 50, 41 (2017).
- Corina N. Babalic, A. S. Carstea, **„Bilinear approach to supersymmetric Gardner equation”**, Theoretical and Mathematical Physics, Vol. 188, No. 2, 1172–1180 (2016).
- Corina N. Babalic, Radu Constantinescu and Vladimir S. Gerdjikov, **On the Soliton Solutions of a Family of Tzitzeica Equations**, JGSP 37, 1–24 (2015).
- Corina N. Babalic, Adrian S. Carstea, **On some new forms of lattice integrable equations**, Central European Journal of Physics 12(5), 341-347, (2014).
- N. C. Babalic, R. Constantinescu, V. S. Gerdjikov, **On Tzitzeica equation and spectral properties of related Lax operators**, Balkan Journal of Geometry and Its Applications, Vol. 19, No. 2, 11-22, (2014).
- Corina N. Babalic, A.S. Carstea, **On various integrable discretizations of a general two-component Volterra system**, Journal of Physics A: Math. Theor. 46, 145205, (2013)
- Nicoleta Corina Babalic, **On a new lattice Volterra system**, Romanian Journal of Physics, vol. 58, Nos. 5-6, 408-413, (2013).
- Corina N. Babalic, Radu Constantinescu, Vladimir S. Gerdjikov, **Two soliton solution of Tzitzeica equation**, Physics AUC, vol. 23, 36-41, (2013).
- Corina Babalic, A.S. Carstea, **Alternative integrable discretisation of Korteweg de Vries equation**, Physics AUC, vol. 21, 95-100 (2011).

Published books:

Fizica atomului și moleculei. Lucrări practice, N.C. Băbălîc, I. Pălărie, Ed. Universitaria, Craiova, 2017, 171 pg, ISBN 978-606-14-1285-3.

Sisteme neliniare integrabile si fenomenologie solitonica, Nicoleta Corina Babalic, Ed. Universitaria, Craiova, 2018, 148 pg, ISBN 978-606-14-1452-9.

Workshops and Conferences attended

Oct. 29-31, 2020 – „International Conference on Applied Mathematics and Numerical Methods (third edition)”, Craiova, Romania, oral presentation “**Soliton solutions for complex semidiscrete mKdV equation**”

Sept. 27-29, 2020 – „Workshop on quantum fields and nonlinear phenomena”, Craiova, Romania, poster „**Hirota bilinear method for constructing integrable discretizations of semidiscrete solitonic equations**”

Nov. 7-10, 2019 - „60 years of academic education in sciences at the University of Craiova”, Craiova, Romania, poster „**1-super soliton solution of susy-AKNS system**”

June 21-27, 2016 - "**8th International Conference on Application of Mathematics in Technical and Natural Sciences – AMITANS 2015**", Albena, Bulgaria, oral presentation “Super-solitons and Mixed Solutions for Defocusing Super-Gardner Equation”;

May 26-28, 2016 – „**TIM 15-16**”, West University, Romania, Timisoara, oral presentation „Solutions of Defocusing Super-Gardner Equation”;

Nov. 8-14, 2015 - CERN – SEENET-MTP PhD Training Program on Modern Aspects of Quantum Field Theory and Applications, Romania, Bucharest;

June 28 - July 2, 2015 - “**Seventh International Conference on Application of Mathematics in Technical and Natural Sciences – AMITANS 2015**” , Bulgaria, Albena, oral presentation „Bilinear supersymmetric Gardner equation and its soliton solutions”;

June 22-28, 2015 – “**The XXIIIth International Conference on Integrable Systems and Quantum symmetries (ISQS-23)**” , Czech, Prague, oral presentation “A note on integrability of supersymmetric Gardner equation and super-lump solutions”;

Sept. 24-28, 2014 - „**The Joint Meeting on Quantum Field Theory and Nonlinear Dynamics**, Romania, Sinaia, poster presentation „On the Family of Tzitzeica equations and the properties of their soliton solutions”;

Sept 12-13, 2014 - "**Joint International Conference of Doctoral and Post-Doctoral Researchers**", Romania, Craiova, “1-soliton solutions of Tzitzeica I equation” ;

June 30, 2014 - "**Sixth Conference of the Euro-American Consortium for Promoting the Application of Mathematics in Technical and Natural Sciences**", Albena, Bulgaria, oral presentation “On soliton solutions of Tzitzeica II equation”;

Dec. 18, 2013 - “**Scientific communications of young researchers, IFIN-HH**”, Romania, Bucharest-Magurele, oral presentation „On soliton solutions of Tzitzeica equation”;

Nov. 28 – Dec. 2, 2013 – „**International School and Workshop on Nonlinear Mathematical Physics and Natural Hazards**”, Bulgaria, Sofia, poster presentation „On Tzitzeica equation and spectral properties of related Lax operators”;

Nov. 21-24, 2013 – „**TIM-13**”, West University, Romania, Timisoara, oral presentation „On soliton solutions of Tzitzeica equation”;

Oct. 10-13, 2013 – „The International Conference of Differential Geometry and Dynamical Systems” (DGDS-2013), University Politehnica of Bucharest, Romania, Bucharest, oral presentation „On soliton solutions of Tzitzeica equation”;

Dec. 17, 2012, „Scientific communications of young researchers, IFIN-HH” 2012, Romania, Bucharest-Magurele, oral presentation „On two integrable discretisations of a general two component Volterra system 1-D”;

Sep. 19-22, 2012 - „Quantum Field Theory and Hamiltonian Systems” (QFTHM), Romania, Craiova, poster „On two integrable discretizations of a general two component Volterra system”;

Jul. 2012 - „The Central European Workshop on Quantum Optics”, Romania, Sinaia; member in the media team;

Sep. 2010 - The 7th edition of „Quantum Field Theory and Hamiltonian Systems” (QFTHM), Romania, Caciulata;

Sep. 2004 - The 4th edition of „Quantum Field Theory and Hamiltonian Systems” (QFTHM), Romania, Caciulata.

Seminar talks

Jan 21, 2016 – „Soliton and super-soliton dynamics and integrability on lattices”, Department of Theoretical Physics, IFIN-HH

June 21, 2013 - "On some new forms of lattice integrable equations", Geometry and Physics group (GAP), Department of Theoretical Physics IFIN-HH

Awards

Dec 20, 2013 – „Serban Titeica prize for remarkable contributions of young researchers”, awarded by IFIN-HH

Language Proficiency

- Fluent written and spoken: **Romanian** (native), **English** (excellent), **French** (good),
- Basic knowledge: **Italian, Spanish**

Other experience and skills

- Proficient in **Windows**
- Proficient in scientific editing (**LaTeX**)
- Proficient in video and audio editing (**Adobe CS3-CS5 Master Collection**)
- Experienced in a few expert symbolic computation systems (**Mathematica, Matlab**)

Team member in organizing national and international competitions

2017 - 2020 – **PROFIZ** (ed. VII, VIII, IX, X), Inter-regional Competition.

2020 – **2nd BALKAN PHYSICS OLYMPIAD 2020** (BPO 2), <https://balkanphysicalunion.info/?p=1518>

Other scientific activities

2017 - present - Secretary of the **Romanian Society of Physics**, Craiova

Reviewer at Scientific Journals (Modern Physics Letters B, International Journal of Modern Physics B, Journal of Physics A: Mathematical and Theoretical, Physica Scripta).