

# Marko Nedeljkov CV

## BASIC INFORMATION

### Personal Information

Name: Marko Nedeljkov

Address: University of Novi Sad, Faculty of Sciences, Department of Mathematics and Informatics, Trg Dositeja Obradovića 4, Novi Sad, Serbia

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Date of birth: 14.04.1966.

Family status: married, two children

Languages: English (fluent), German (basic)

### Education

- BSc - 1986-1990, University of Novi Sad
- MSc -1993, "Integral Transforms in the Space of Generalized Functions", University of Novi Sad
- PhD - 1995, "Colombeau Generalized Functions in the theory of PDEs",

### Employment

- Full professor since 2005 University of Novi Sad
- Associate professor 2000-2005
- Assistant professor 1995-2000
- Teaching assistant 1990-1995 University of Novi Sad

## QUALIFICATIONS IN RESEARCH AND DOCTORAL TRAINING

### Research interest

hyperbolic PDEs with singularities, conservation law systems, generalized functions (Colombeau), stochastic PDEs and DEs, mathematical modeling, fluid dynamics, fractional PDEs

### Expertise

- Referee in about 40 international mathematical journals (Acta Applicandae Mathematicae, Advances in Differential Equations, Advances in Difference Equations, Applicable Analysis, Applied Mathematics Letters, Applications and Applied Mathematics: An International Journal, Applied Mathematics and Computation, Archiv der Mathematik, Bulletin of the Iranian Mathematical Society, Communications in Mathematical Sciences, Communications in Nonlinear Science and Numerical Simulation, Communications of the Korean Mathematical Society, Computational and Applied Mathematics, Filomat, Fractional Calculus and Applied Analysis, Electronic Journal of Differential Equations, European Journal of Mechanics B Fluids, International Journal of Non-Linear Mechanics, Journal of Mathematical Analysis and Applications, Journal of Mathematical Physics, Journal of Nonlinear Sciences and Applications, Kragujevac Journal of Mathematics, Mathematical Methods in the Applied Sciences, Mathematische Nachrichten, NODEA, Nonlinear Analysis Series A: Theory, Methods & Applications, Nonlinear Analysis Series B: Real World Applications, Novi Sad Journal of Mathematics, Publications de l'Institut Mathématique, Physics Letters A, Quarterly of Applied Mathematics, Rocky Mountain Mathematics Journal, Turkish Journal of Mathematics, Zeitschrift fuer Angewandte Mathematik und Physik, Zeitschrift für Angewandte Mathematik und Mechanik, Zeitschrift für Naturforschung A)
- Referee for 6 international founded projects (Austria, Belgium, Hungary), several domestic and bilateral ones

### Associate Editor

- Journal of Inequalities and Applications, Springer (2017-2020)

- Filomat, University of Niš (2014-)
- Publications de l'Institut Mathématique Belgrade (2014-)
- Matematicki Vesnik, Serbian Mathematical Society (2013-)
- Novi Sad Journal of Mathematics, University of Novi Sad (2015-)

#### **Post-doc, research, invited lectures and visiting positions**

- The Institut für Mathematik und Geometrie, Innsbruck, November 1994
- Postdoc at the Institut für Mathematik und Geometrie, Innsbruck, from September to October 1997, and from January to March 1998 (OÄD stipend)
- The Edwin Schroedinger Institute, Wien, from November to December 1997 and in December 1999 (ESI project Nonlinear theory of generalized functions coordinator M. Obeguggenberger)
- The Institut für Technische Mathematik, Geometrie und Bauinformatik, Innsbruck, from October 2000 to January 2001 (OÄD stipend)
- Visiting professor at the Shanghai Jiao Tong University, Department of Mathematics, June-July 2016.
- Invited lecture at the workshop Problems on kinetic theory and PDE's, Нови Сад 2014,
- Invited lecture at the International Conference on Generalized Functions GF2016, Dubrovnik
- Invited lecture at the International Conference on Generalized Functions GF2018, Novi Sad
- Two invited lectures at the Edwin Schrödinger Institute
- Several invited lectures at the University of Innsbruck (2012, 2013, 2014, 2018)
- Invited lecture at the Laboratoire J.-L. Lions, Paris VI, 2019
- Several invited lectures at the Mathematical Institute of Serbian Academy of Sciences and Arts (Mathematics and Mechanics seminars).

#### **Research projects**

##### *International*

- IEA project "Modèles cinétiques et hyperboliques pour les mélanges gazeux et les milieux granulaires", 2022-2023
- PICS: "Kinetic and hyperbolic models for gaseous mixtures and granular media", Laboratoire Jacques-Louis Lions, Paris V and Department of Mathematics and Informatics, University of Novi Sad, 2018-2020
- RealForAll: "Real-time measurements and forecasting for successful prevention and management of seasonal allergies in Croatia-Serbia cross-border region" bilateral project Serbia-Croatia ID: HR-RS151, 2017-2020
- Bilateral Serbia-France "Pavle Savic" project, 2008-2011, project leader
- WUS bilateral project Austria-Serbia 2000, project leader

##### *National*

- Leader of the project ON174024: "Methods of Functional and Harmonic Analysis and PDE with Singularities" of Serbian Ministry of Science (2018-2019)
- Leader of the project "Numerical solutions to conservation law systems", AP Vojvodina, (2017-2019)
- Sub-project coordinator "Mathematical analysis of renewable energy sources" in III044006, Ministry of Science, Serbia (2011-2019)
- Participation in several fundamental research projects of Serbian Ministry of Science (from 2002)

#### **Commercial projects**

- Modelling and Forecasting Stock Price Behaviour – Analysis of High Frequency Financial Data – Research project for Dresdner Kleinwort Securities, London, 2006-2007

#### **PhD supervision**

- Danijela Rajter, Construction of Colombeau Solutions to Deterministic and Stochastic Differential Equations, Novi Sad, 2002.
- Nebojša Dedović, Delta Shocks and Wave Front Tracking Method, Novi Sad, 2014.
- Tanja Krunić, Using numerical procedures for determination of admissible conservation laws solutions, Novi Sad, 2016.
- Dalal Daw, Shadow Wave Solutions for Some Balance Law Systems, Novi Sad 2017
- Sana Mohamed Abdulwanis Mohamed, Split delta shocks and applications to conservation law systems, 2019.
- Sanja Ružičić, Entropies, singular solutions to conservation law systems and their interactions, 2020.
- Nevena Dugandžija, Nonlinear Schrödinger equation with singularities, Novi Sad 2021.
- Branko Marković, Stochastic perturbation for systems of conservation laws, finished with expected defense in February 2022.

#### **Head of PhD thesis committee**

- Dora Seleši, "Generalized stochastic processes in infinite dimensional spaces with applications in singular stochastic PDEs", Novi Sad 2007.
- Diana Dolićanin, "Isochronous and auto-oscillatory dynamical systems in a plane with fractional dissipation", Novi Sad, 2009
- Milana Pavić, "Mathematical modelling and analysis of polyatomic gases and mixtures in the context of kinetic theory of gases and fluid mechanics", joint PhD of Ecole Normale Supérieure de Cachan and University of Novi Sad" Paris - Novi Sad, 2014

#### **Member of PhD thesis committee abroad**

- Vincent Teyekpiti, "Well-posedness Issues for Nonlinear Partial Differential Equations Appearing in the Modeling of Long Water Waves", University of Bergen, 2018

#### **PhD level courses**

- "Linear Partial Differential Equations", "Nonlinear PDEs" and "Applications of PDEs" PhD studies of Mathematics at University of Novi Sad.
- "Partial Differential Equations", Doctoral School of Mathematics, Serbia.
- "Introduction to Systems of Conservation Laws", DAAD summer course, 2004.
- SECCF Workshop: Advanced Financial Modeling (in Serbian), Novi Sad, 2009.
- A Class of Unbounded Solutions to Conservation Law Systems, short course, Shanghai Jiao Tong University, July 2016.

## **TEACHING QUALIFICATIONS**

### **Teaching activities**

- MSc courses: Partial Differential Equations and Equations of Mathematical Physics
- Basic studies: different courses in the field of Mathematical Analysis and General Mathematics for non-mathematicians on bachelor, master and PhD level in the past.
- Courses of Statistics for students of other universities

### **Pedagogical training**

- BSc studies with pedagogical subjects ("Professor of Mathematics in schools"): Psychology, pedagogy, Mathematical Teaching courses with Practical training at elementary and secondary schools.
- One of the organizers and participant of Tempus JEP CD 17017-2002: Mathematics Curricula for Technological Development, 2003-2006, financed by EC. The main result was founding two MSc studies at University of Novi Sad: Techno and

Financial Mathematics.

- Participant of "Teaching Mathematics and Statistics in Sciences: Modeling and Computer-aided Approach" HU-SRB/0901/221/088 TEAMATHMODSCI (2010-2011) <https://www.dmi.uns.ac.rs/ipa/ipa/index.html>
- Participant of "Non-standard forms of teaching mathematics and physics: experimental and modeling approach" MathPHYS- BRIDGE (2013-2015) <https://www.dmi.uns.ac.rs/ipa/index.html#!aboutus>

### **Teaching materials**

- See "Teaching" and "Short Courses" at <http://people.dmi.uns.ac.rs/~marko/>

## **OTHER QUALIFICATIONS**

### **Positions and prizes**

- Member of the National Science Council for Mathematics, Mechanics and Computer Science 2011-2016 and 2016- (Vice president in this term)
- Head of the Mathematics department (2007-).
- Vice president of IAGF (International Association of Generalized Functions) (2016-)
- Member of Doctoral School of Mathematics Board (national doctoral program) (2015-)
- Prize from Serbian Ministry of Science for contribution in scientific projects 2000-2005.
- Mileva Marić prize -- The best PhD thesis at University of Novi Sad in Mathematics, Physics or Engineering.