

# Curriculum Vitae of Antun Balaž



Dr. Antun Balaž

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Research Professor

Born: 27 December 1973 in Zrenjanin, Serbia

## EDUCATION AND PROFESSIONAL POSITIONS

1993 – 1997 University of Belgrade, BSc in Physics (1997)  
1998 – 2004 University of Belgrade, MSc in Physics (2004)  
2002 – 2004 Institute of Physics Belgrade, Research Assistant  
2002 – 2005 University of Belgrade, Faculty of Physics, Teaching Assistant  
2004 – 2008 University of Belgrade, PhD in Physics (2008)  
2004 – 2008 Institute of Physics Belgrade, Assistant Researcher  
2008 – 2010 Institute of Physics Belgrade, Assistant Research Professor  
2009 – 2014 University of Novi Sad, Assistant Professor (Docent)  
2010 – 2015 Institute of Physics Belgrade, Associate Research Professor  
2014 – Institute of Physics Belgrade, Head of the National Center of Excellence for the Study of Complex Systems  
2015 – Institute of Physics Belgrade, Research Professor  
2015 – Institute of Physics Belgrade, Deputy Director

## RESEARCH INTERESTS

- Ultra-cold quantum gases, BEC
- Numerical simulations of complex systems
- Quantum field theory, functional formalism

## TEACHING EXPERIENCE

1994 – Petnica Science Center, Guest lectures in physics and astronomy  
2002 – 2003 University of Belgrade, Faculty of Physics, Teaching Assistant for the subject Quantum Electrodynamics  
2002 – 2003 University of Belgrade, Faculty of Physics, Teaching Assistant for the subject Quantum Field Theory  
2002 – 2005 University of Belgrade, Faculty of Physics, Teaching Assistant for the subject Theory of Elementary Particles  
2009 – 2014 University of Novi Sad, Faculty of Natural Sciences, Assistant Prof. (Docent), Courses: Introduction to Quantum Field Theory and Numerical Methods in Condensed Matter Physics  
2015 – University of Belgrade, Faculty of Physics, PhD courses: Quantum Fluids and Monte Carlo Simulations in Physics

## RESEARCH PROJECTS AND RELATED ACTIVITIES (SINCE 2010)

2010 – 2015 Country representative, PRACE-1IP, PRACE-2IP, PRACE-3IP (Partnership for Advanced Computing in Europe), EU FP7 projects  
2010 – 2014 Country representative, EGI-INSPIRE (European Grid Initiative), EU FP7 project  
2011 – 2012 PI, "Numerical and Analytical Investigation of Ultracold Bose Gases in Disordered Potentials", Bilateral project, Serbian Ministry of Education & Science and DAAD  
2011 – 2019 PI, "Modeling and Numerical Simulations of Many-Body Systems", Serbian Ministry of Education & Science, research project ON171017  
2011 – 2016 Country leader, agINFRA, SemaGrow, EU FP7 projects  
2013 – 2014 PI, "Numerical and Analytical Investigation of Dipolar Bose-Einstein Condensates", Bilateral project, Serbian Ministry of Education & Science and DAAD  
2015 – 2018 Country leader, VI-SEEM, H2020 project  
2015 – 2016 PI, "Impurities in Bose-Einstein Condensates", Bilateral project, Serbian Ministry of Education and Science and DAAD  
2016 – 2017 PI, "Dynamics of Ultracold Dipolar Fermi Gases", Bilateral project, Serbian Ministry of Education and Science and Austrian Mobility Agency OeAD  
2017 – 2018 PI, "Bose-Einstein Condensates of Light", Bilateral project, Serbian Ministry of Education and Science and DAAD  
2019 – 2020 PI, "Quantum Droplets of Dipolar Bosons", Bilateral project, Serbian Ministry of Education and Science and DAAD  
2019 - Country leader, SMARTCHAIN and NI4OS-Europe, H2020 projects



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## **Biography – Dr. Antun Balaž**

Dr. Antun Balaž is a Full Research Professor, Deputy Director of the Institute of Physics Belgrade, and Head of the National Center of Excellence for the Study of Complex Systems.

He was born in 1973 in Zrenjanin, where he attended elementary and high school. He continued his education at the Faculty of Physics, University of Belgrade, where he studied theoretical physics and obtained his diploma and magister degree, as well as his PhD degree in 2008. He works at the Institute of Physics Belgrade since 1998, first through a fellowship by the Serbian Ministry of Science, since 2002 he is employed and as of 2007 he has a permanent position. From 2002 to 2005 he was part-time teaching assistant at the Faculty of Physics, University of Belgrade for courses on Quantum field theory, Quantum electrodynamics, and Theory of elementary particles. From 2009 to 2014 he was an Assistant Professor at the Faculty of Natural Sciences and Mathematics, University of Novi Sad for courses on Quantum field theory and Numerical methods in condensed matter physics. Since 2015 he is a lecturer at the PhD program in Condensed matter physics and statistical physics, Faculty of Physics, University of Belgrade for courses on Quantum liquids and Monte Carlo simulations in physics.

He is a recipient of the award "Prof. Dr. Ljubomir Ćirković" for the best diploma thesis in physics, and the annual award of the Institute of Physics Belgrade for the best magister thesis. PhD thesis of Dr. Balaž, entitled "Speeding up the convergence of path integrals" was done under supervision of Dr. Aleksandar Bogojević and Dr. Aleksandar Belić.

After obtaining PhD degree, Dr. Antun Balaž extended his research to study of ultracold quantum gases and Bose-Einstein condensation, and established close collaboration with several research groups from Germany, Romania, Brazil, and India. Main topics of his research are related to collective and nonlinear excitations of Bose-Einstein-condensed systems, including the study of effects of dipole-dipole interaction and disorder. For the obtained results, Dr. Balaž received the 2014 annual award for research of the Institute of Physics Belgrade.

He was advisor/co-advisor of five PhD theses, two MSc theses, and several diploma theses. From 2013 to 2015 Dr. Balaž was a member of the Council for multidisciplinary studies of the University of Belgrade, member of the Council of the Association of Research Institutes of Serbia (2016-2017), and a member of the Council of the University of Belgrade (2018). He is a member of the Program Committee of the Optical Society of Serbia (since 2014), head (2014-2018) and a member (2010-2014 and again since 2019) of the Board of Directors of the Astronomical Observatory Belgrade, and member of the Serbian National Physics Committee (since 2017), an advisory body of the Serbian Ministry of Education and Science.

Dr. Antun Balaž is one of founders of the Scientific Computing Laboratory at the Institute of Physics Belgrade, which he is now heading. This laboratory was established in 2004, and in 2006 became EU Center of Excellence for Modeling of Complex Systems, within the FP6 project CX-CMCS. Since 2014, this laboratory was awarded the status of the National Center of Excellence for the Study of Complex Systems. Dr. Balaž is principal investigator for the national research project

ON171017 (since 2011), and has coordinated/coordinates participation of Serbian teams in a number of EU FP6, FP7 and H2020 projects (EGEE-II, EGEE-III, SEE-GRID, SEE-GRID-2, SEE-GRID-SCI, HP-SEE, PRACE-1IP, PRACE-2IP, PRACE-3IP, agINFRA, SemaGrow, VI-SEEM, SMARTCHAIN, NI4OS-Europe). Since 2009 Dr. Antun Balaž has coordinated a series of bilateral projects with Germany on topics related to Bose-Einstein condensation, and developed an extensive exchange of PhD and master students from universities in Berlin, Potsdam, Duisburg, and Kaiserslautern.

He is author of more than 60 papers in international scientific journals, and more than 60 contributed and invited talks at international conferences. According to the Web of Science, his papers are cited 990 times, and his Hirsch index is 19. He was a member of program committees for several national and international conferences, including Photonica 2015, Photonica 2017, and Photonica 2019, and was a co-chair of the XIX National Symposium of Condensed Matter Physics (SFKM 2015).