

## **Andrei Manolescu**

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### **Personal data**

surname: Manolescu first name: Andrei (m)  
born: 24 March 1958, Bucharest, Romania  
Icelandic ID (kennitala): 240358-2209  
nationality: Romanian citizenship: Romanian and Icelandic  
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### **Education**

1978-1983, University of Bucharest, Faculty of Physics.  
1989-1992, Doctorate at the Institute of Atomic Physics, Bucharest; thesis: "Contributions to the study of the response and correlation functions in quantum many-body systems", supervisor Prof. G. Ciobanu.  
Doctor in Physics since 1992.

### **Positions**

1983 - 1985, physicist at Machine-Tools Factory, Bucharest, nondestructive defectoscopy.  
1985 - 1999, research position at the National Institute of Materials Physics, Bucharest (former Institute of Physics and Technology of Materials, component of the Institute of Atomic Physics), Principal Researcher 1 since 1995 (the highest rank).  
1995 - 2002 Associate Member at International Centre for Theoretical Physics, Trieste, Italy.  
1999 - 2007, Research Scientist at Decode Genetics, Reykjavik, Iceland.  
2008-2012, Associate Professor at Reykjavik University  
2012-present Professor at the Department of Engineering, Reykjavik University, address: Menntavegur 1, IS-102 Reykjavik (since 1 February 2012). Director of the Nanophysics Center of Reykjavik University.  
2012-2013, Chair of the Research Council of the School of Science and Engineering, Reykjavik University  
2013-2015 Chair of the Research Council of Reykjavik University

### **Research in physics**

My research in physics is oriented to theoretical modelling and numerical calculations of quantum-mechanical electronic properties of semiconductor nanostructures. I work on the following subjects: low-dimensional electron systems, effects of magnetic fields, many-body Coulomb phenomena, transport and electromagnetic absorption in nanoscale systems. At present I am mostly interested in electronic properties of nanowires with internal structure, time dependent transport in nanosystems, and effects of electron-photon interaction. I am also involved in research on classical dynamics of electrons in nanoscale vacuum diodes, polarization phenomena in solar cells based on perovskite materials, and electronic properties of silicon nanowires. Most of my present research in physics is performed within the Nanophysics Center, Reykjavik University, website <http://nano.ru.is/>

### **Research in genetics**

During 1999-2007 I worked at Decode Genetics where I did statistical analysis of human genetic data. The purpose of the work was to detect by statistical calculations genes involved in complex human diseases. I did linkage and association analyses of microsatellite markers, single-nucleotide polymorphisms (SNP), and haplotypes, mostly in cardiovascular and cancer diseases. Towards the end of that period, and until 2022, I participated in several projects on cancer genetics in Romania funded by EU and EEA.

### **Invitations for research, collaboration, and scientific lectures**

Max-Planck-Institut für Festkörperforschung Stuttgart, International Centre for Theoretical Physics Trieste, Science Institute University of Iceland, University of Regensburg, Bilkent University Ankara, Winter School LesHouches, Weierstrass Institute Berlin (WIAS), University of Bucharest, Wrocław University of Science and Technology, Clemson University, West Virginia University, Washington and Lee University (VA), University of Hamburg, Singapore University of Technology and Design, National Taiwan University, University of Balearic Islands Palma de Mallorca, Université Paris-Saclay, University of Oslo, Forschungszentrum Jülich, Holon Institute of Technology, board member at Nordita (Stockholm, 2022-2025).

### **Awards**

2016 Reykjavik University Research Award.

Doctor Honoris Causa at Carol Davila University of Medicine and Pharmacy, Bucharest, Romania, for common research in human genetics (since April 2024).

### **Teaching**

University of Bucharest: Quantum mechanics 1986-1987.

University of Iceland: Many-body, solid-state, statistical physics, semiconductors, 1998-2003, 2010.

Reykjavik University: Physics 3 (optics, quantum, atomic, and nuclear physics), Theory of Electromagnetism, Physics Labs (Physics 1,2,3), Scientific Computing, Classical Dynamics, Statistics, Biostatistics.

### **Grants**

Rannis Excellence Grant, Computational center for design of materials and devices, project 090025011 (2009-2011, co-applicant).

Reykjavik University Development Fund - research project T09001 (2009-2010, PI).

Rannis Project Grant "Coulomb interaction and current flow in quantum devices", project 100008021 (2010-2012, PI).

Rannis Equipment Fund „Computer cluster for multidisciplinary scientific research“, project 110089-0031 (2011, PI).

Rannis Project Grant „Properties of microscopic vacuum electronic devices“ (2011-2014, co-applicant, PI Ágúst Valfell).

Representative of Iceland in the European COST actions TERA-MIR Radiation: Materials, Generation, Detection and Applications (MP1204) and Thermodynamics in quantum regime (MP1209).

Leader of Reykjavik University teams in two EEA-Romania grants (2014-2017): „Perovskites for Photovoltaic Efficient Conversion Technology“ and „Genetic epidemiology of cancer in Romania“.

Landsvirkjun project grants, Photovoltaics and thermovoltaics with Silicon nanowires (2013 and 2016, co-applicant, PI Halldór Svavarsson).

Rannís Infrastructure Fund, High performance computer (2015, co-applicant, PI Hannes Jónsson).

Rannís Project Grant, Core-shell nanoantennas (2016, PI).

Rannís Project Grant, DC vacuum-microdiode arrays as tunable THz sources (2017, co-applicant, PI Ágúst Valfell).

Rannís Infrastructure Fund, IHPC-computer cluster and expansion equipment (2017, co-applicant, PI Vidar Gudmundsson; 2018, co-applicant, PI Henning Arnór Úlfarsson; 2019, co-applicant, PI Egill Skúlason, 2020 co-applicant, PI Vidar Gudmundsson).

US Air Force Office of Scientific Research (AFSOR), Molecular dynamics simulations for emission and propagation of electrons in cathode nanostructures (2018-2021) and Electron emission physics simulations (2023-2025), co-applicant, PI Ágúst Valfell.

Representative of RU in the EEA Grant Integrated Applied Genetics Training, partners "Carol Davila" University of Medicine and Pharmacy and Exigia Medical from Romania, and Reykjavík University (2018-2020).

Rannís Project Grant, Thermoelectric transport in core-shell nanowires (2019, PI).

Rannís Student Innovation Fund, Molecular Dynamics of Perovskite Solar Cells (2020, PI).

Leader of Reykjavík University team in the EEA-Romania grants „Towards perovskite large area photovoltaics“ (2020-2023).

Sustainability Institute Forum and Landvirkjun, Atomistic studies of organo-halide materials for photovoltaics, PhD student grant Rachel Brophy (2020-2021), silicon nanowires as humidity and gas sensor for environmental applications, with Halldór Svavarsson (2022).

Reykjavík University Infrastructure Fund, Optical Table (2021), UV Laser (2022), Sputter-Coater (2024).

### **Reviewer**

Physical Review Letters, Physical Review B, Reviews of Modern Physics, Journal of Physics A, Journal of Physics Condensed Matter, other publications, postdoctoral positions at Nordita (2015-2021).

### **Publications**

278 ISI journal publications in physics and genetics. Several patents on genomic drug targets. H-index 38 Web of Science (over 15700 citations) and 41 Google Scholar (over 23800 citations). The complete list of publications is visible at <https://scholar.google.is/citations?user=laULmZoAAAAJ&hl=en>  
<https://www.webofscience.com/wos/author/record/830171>  
<https://orcid.org/0000-0002-0713-4664>