PROF. DR. VLADIMIR M. FOMIN

Research Professor
Institute for Integrative Nanosciences (IIN)
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Personal Data

Birthdate: [redacted]
Birthplace: [redacted]

Academic Titles

1999	University Professor in Theoretical Physics Higher Attestation Commission of the Republic of Moldova
1990	Habilitation (Doctor habilitat in the physical and mathematical sciences) Academy of Sciences of the Republic of Moldova (Kishinev)/ Theme of the Habilitation Thesis: *Kinetic Effects Caused by the Interaction between Charge Carriers, Electromagnetic Fields and Porarisation Fields, in Planar Structures of Semiconductors and Dielectrics*
1986	Senior Scientific Researcher in theoretical and mathematical physics Higher Attestation Commission of the USSR
1978	Ph.D. (Candidate in the physical and mathematical sciences) State University of Moldova/Theme of the Ph.D. Thesis: *Studies of the Kinetic Properties of Free Electrons in Strong Fields Using the Method of the Statistical Operatorin the Path-Integral Representation*

Professional career

2009-...	Research Professor Institute for Integrative Nanosciences (IIN) Leibniz Institute for Solid State and Materials Research (IFW) Dresden
2008-2009	Guest Professor Group "First-Principles and Statistical Methods in Materials Physics", Faculty of Physics and Center for Nanointegration (CeNIDE) University of Duisburg-Essen, Duisburg
1995-1997, 2000-2008	Research Professor Laboratory „Theoretical Solid State Physics", Department of Physics University of Antwerp, Belgium
06.2008-10.2008	Guest Scientist Division Quantum and Physical Chemistry, Department of Chemistry Catholic University of Leuven, Belgium
1998-1999, 2003-2007	Guest Scientist Group "Photonics and Semiconductor Nanophysics", Department of Applied Physics and COBRA Inter-University Research Institute Eindhoven University of Technology, The Netherlands
1993-1994	Research Fellow of the Alexander von Humboldt Foundation Department of Physics, Martin-Luther-University of Halle-Wittenberg

1991-1993	Principal Scientific Researcher Laboratory "Physics of Multi-Layer Structures" State University of Moldova, Kishinev, Republic of Moldova
1978-1991	Leading Scientific Researcher, Director Laboratory "Physics of Multi-Layer Structures" State University of Moldova, Kishinev, Republic of Moldova

Research honours

2007	Honorary Member of the Academy of Sciences of Moldova
2000	Medal "Academician P. L. Kapitsa"/Academy of Natural Sciences of Russia
1999	Diploma of a Scientific Discovery of the Phenomenon *Propagation of Spatially Extended Interface Phonon Polaritons in Composite Superlattices* Academy of Natural Sciences of Russia
1987	State Prize/Republic of Moldova

Management experience

Co-promoter, leader of research teams and principal researcher in scientific research projects (15 international und European, 9 bilateral, 18 national scientific research projects; head of scientific research groups; adviser of postdoctoral scientific researchers

Membership in the Scientific Research Societies and Institutions

Physical Society of the Republic of Moldova; German Physical Society (1994) European Physical Society (1995); American Physical Society (1995); IEEE (USA, 2012), Nanoscale Superconductivity COST Action (European Cooperation in Science and Technology) (2013), Mediterranean Institute of Fundamental Physics (2013), Nanoscale Coherent Hybrid Devices for Superconducting Quantum Technologies COST Action (European Cooperation in Science and Technology) (2018)

Research expertise in nanophysics

- topological effects in quantum rings and strain-induced micro- and nanoarchitectures,
- phase boundaries and vortex matter in micro- and nanoarchitectures and patterned superconductors,
- superconducting properties of metallic nanograins,
- phonons, vibrational excitations and polaronic effects in nanostructures,
- topological states of light and spin-orbit coupling in microcavities,
- optical properties of quantum dots,
- thermoelectric properties of semiconductor nanostructures,
- surface-induced magnetic anisotropy in mesoscopic systems of dilute magnetic alloys,
- quantum transport in sub-0.1 μm semiconductor devices.

Publications

4 monographs, including *Physics of Quantum Rings*, Springer, 2014 and 2018 (Editor), 3 textbooks, 11 review papers, 200 scientific articles. h-index: 32 according to Google Scholar.

Selected principal publications

1. **V. M. Fomin** (Editor), Physics of Quantum Rings, Springer, Berlin - Heidelberg, 2014, 487 p.; Physics of Quantum Rings, 2nd Edition, Springer International Publishing, Cham, 2018, 586 p. https://www.springer.com/us/book/9783319951584#aboutBook
2. **V. M. Fomin**, Topology and Geometry Controlled Properties of Nanoarchitectures (Preface to the Focus Issue) Physica Status Solidi – Rapid Research Letters 13, 1800595 (2019) https://onlinelibrary.wiley.com/doi/epdf/10.1002/pssr.201800595
3. **V. M. Fomin**, Topology-driven effects in advanced nanoarchitectures, in: A. Sidorenko (Ed.), Functional Nanostructures and Metamaterials, Springer International Publishing, Cham, 2018, 195 – 220. https://doi.org/10.1007/978-3-319-90481-8_10.
4. R. O. Rezaev, E. A. Posenitskiy, E. I. Smirnova, E. A. Levchenko, O. G. Schmidt and **V. M. Fomin**, Voltage Induced By Superconducting Vortices In Open Nanostructured Microtubes, Phys. Stat. Sol. RRL 13, 1-12 (2019) https://doi.org/10.1002/pssr.201800251
5. P. Corfdir, O. Marquardt, R. B. Lewis, C. Sinito, M. Ramsteiner, A. Trampert, U. Jahn, L. Geelhaar, O. Brandt, and **V. M. Fomin**, Excitonic Aharonov–Bohm Oscillations in Core–Shell Nanowires, Adv. Mater. 31, 1805645, pp. 1-6 (2019) (https://doi.org/10.1002/adma.201805645).
6. **V. M. Fomin**, R. O. Rezaev, E. A. Levchenko, D. Grimm and O. G. Schmidt, Superconducting nanostructured microhelices, Journal of Physics: Condensed Matter 29, 395301, 1-9, (2017).
7. G. Li, M. Yarali, A. Cocemasov, S. Baunack, D. L. Nika, **V. M. Fomin**, S. Singh, T. Gemming, F. Zhu, A. Mavrokefalos, O. G. Schmidt, In-Plane Thermal Conductivity of Radial and Planar Si/SiO_x Hybrid Nanomembrane Superlattices, ACS Nano 11, 8215–8222 (2017).
8. L. B. Ma, S. L. Li, **V. M. Fomin**, M. Hentschel, J. B. Götte, Y. Yin, M. R. Jorgensen, and O. G. Schmidt, Spin–orbit coupling of light in asymmetric microcavities, Nature Commun. 7, 10983, 1-6 (2016).
9. M. Enachi, M. Guix, V. Postolache, V. Ciobanu, **V. M. Fomin**, O. G. Schmidt, and I. Tiginyanu, Light-induced motion of microengines based on microarrays of TiO_2 nanotubes, Small 12, 5497-5505 (2016).
10. **V. M. Fomin** and A. A. Balandin, Phonon Spectrum Engineering in Rolled-up Nano- and Micro-Architectures, Appl. Sci. 5, 728-746 (2015).
11. **V. M. Fomin**, R. O. Rezaev, and O. G. Schmidt, Tunable generation of correlated vortices in open superconductor tubes, Nano Lett. 12, 1282-1287 (2012).
12. E. J. Smith, D. Makarov, S. Sanchez, **V. M. Fomin**, O. G. Schmidt, Magnetic micro-helix coil structures, Phys. Rev. Lett. 107, 097204 (2011).