

Dr. Dmitry Fedorov

Date of birth: 21.05.1974

Nationality: Russian

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Curriculum vitae

I. Professional Experience:

Since 23/10/2024: *Senior research scientist* in Materials Discovery Laboratory at Skolkovo Institute of Science and Technology (Moscow, Russia)

2017-2024 Department of Physics and Materials Science, Faculty of Science, Technology and Medicine, University of Luxembourg (Luxembourg)
2021-2024: *Research scientist*, 2017-2021: *Postdoctoral researcher*
Topics: Development of robust analytical models to describe molecular interactions at the level of highly accurate *ab initio* calculations

2012-2016 *PostDoc*, Max Planck Institute of Microstructure Physics (Halle/Germany)

2006-2011 *PostDoc*, Martin Luther University Halle-Wittenberg (Halle, Germany)
Topics: Development and employment of program packages for *ab initio* calculations of the electronic structure and transport properties of solid states (phenomena related to spintronics and spin-caloritronics)

1999-2005 Laboratory of Solid State Theory, Physical-Technical Institute, Ural Branch of Russian Academy of Sciences (Izhevsk, Russia)

2004-2005: *Senior research scientist*; 2000-2004: *Research scientist*;
1999-2000: *Junior research scientist*

Topics: Development and employment of program packages for calculations of the electronic structure and magnetic properties of solid states

2000-2004 Laboratory of Solid State Theory, Physical-Technical Institute, Ural Branch of Russian Academy of Sciences (Izhevsk, Russia)

System administrator (internal secondary job)

Topics: Installation and administration of Linux and Windows systems

II. Education:

1996-1999 Laboratory of Solid State Theory, Physical-Technical Institute, Ural Branch of Russian Academy of Sciences, Izhevsk, Russia

Ph.D.: Solid State Theory (1999)

1991-1996 Physics department of Udmurt State University, Izhevsk, Russia

M.S.: Theoretical Physics (1996) [with honors]

III. Teaching activities (at the University of Luxembourg):

Winter semester 2018-2019: Course on *Computational Methods* for Master students
Summer semester 2022 & 2023: Course on *Quantum Mechanics* for Bachelor students

IV. Supervision: of Bachelor / Master and PhD students in Germany and Luxembourg

V. Languages known: English, German, French (beginner), Russian (mother tongue)

VI. Selected publications:

A. Khabibrakhmanov, **D.V. Fedorov**, and A. Tkatchenko, *Universal Pairwise Interatomic van der Waals Potentials Based on Quantum Drude Oscillators*, *J. Chem. Theory Comput.* 19, 7895 (2023)

A. Tkatchenko and **D.V. Fedorov**, *Casimir Self-Interaction Energy Density of Quantum Electrodynamic Fields*, *Phys. Rev. Lett.* 130, 041601 (2023)

P. Szabó, S. Góger, J. Charry, M. R. Karimpour, **D. V. Fedorov**, and A. Tkatchenko, *Four-Dimensional Scaling of Dipole Polarizability in Quantum Systems*, *Phys. Rev. Lett.* 128, 070602 (2022)

D. V. Fedorov, M. Sadhukhan, M. Stöhr, and A. Tkatchenko, *Quantum-Mechanical Relation between Atomic Dipole Polarizability and the van der Waals Radius*, *Phys. Rev. Lett.* 121, 183401 (2018)

D.V. Fedorov, C. Herschbach, A. Johansson, S. Ostanin, I. Mertig, M. Gradhand, K. Chadova, D. Ködderitzsch, and H. Ebert, *Analysis of the giant spin Hall effect in Cu(Bi) alloys*, *Phys. Rev. B* 88, 085116 (2013)

D.V. Fedorov, M. Gradhand, S. Ostanin, I.V. Maznichenko, A. Ernst, J. Fabian, and I. Mertig, *Impact of Electron-Impurity Scattering on the Spin Relaxation Time in Graphene: A First-Principles Study*, *Phys. Rev. Lett.* 110, 156602 (2013)

M. Gradhand, **D.V. Fedorov**, P. Zahn, I. Mertig, Y. Otani, Y. Niimi, L. Vila, and A. Fert, *Perfect Alloys for Spin Hall Current-Induced Magnetization Switching*, *SPIN* 2, 1250010 (2012)

K. Tauber, M. Gradhand, **D.V. Fedorov**, and I. Mertig, *Extrinsic Spin Nernst Effect from First Principles*, *Phys. Rev. Lett.* 109, 026601 (2012)

M. Gradhand, **D.V. Fedorov**, F. Pientka, P. Zahn, I. Mertig, and B.L. Györfy, *First-principle calculations of the Berry curvature of Bloch states for charge and spin transport of electrons*, *J. Phys.: Condens. Matter* 24, 213202 (2012)

S. Lowitzer, M. Gradhand, D. Ködderitzsch, **D.V. Fedorov**, and I. Mertig, H. Ebert, *Extrinsic and Intrinsic Contributions to the Spin Hall Effect of Alloys*, *Phys. Rev. Lett.* 106, 056601 (2011)

M. Gradhand, **D.V. Fedorov**, P. Zahn, and I. Mertig, *Extrinsic spin Hall effect from first principles*, *Phys. Rev. Lett.* 104, 186403 (2010)

M. Gradhand, **D.V. Fedorov**, P. Zahn, and I. Mertig, *Fully relativistic ab initio treatment of spin-flip scattering caused by impurities*, *Phys. Rev. B* 81, 020403(R) (2010)