

# Curriculum Vitae

**Prof. Dr. Daria Gorelova**

Maiden name:	<b>Daria Popova</b>
Gender:	Female
Family status:	1 child, married
Year of birth:	1986
Nationality:	Russian
Group website:	<a href="https://www.physik.uni-hamburg.de/en/th1/ag-daria-gorelova.html">https://www.physik.uni-hamburg.de/en/th1/ag-daria-gorelova.html</a>
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## Education

<b>2013</b> (issued 03.06.2014)	<b>PhD Degree</b> at RWTH Aachen University Supervisors: Dr. A. Bringer, Prof. Dr. S. Blügel PhD Thesis: <i>Microscopic description of the ultrafast inverse Faraday effect at subpicosecond time scales</i> . Note: magna cum laude
<b>2009</b>	<b>Master Degree</b> in Physics and Applied Mathematics at MIPT (Moscow Institute of Physics and Technology, State University)
<b>2007</b>	<b>Bachelor Degree</b> in Physics and Applied Mathematics at MIPT

## Current position

<b>2020</b> , Apr.	<b>Junior Professor</b> and Leader of the <b>Freigeist Fellowship</b> group "Seeing excitons in motion" funded by the Volkswagen Foundation I. Institute for Theoretical Physics, Universität Hamburg  Group as of Oct. 2023: 5 Doctoral students and 1 Postdoc
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## Previous positions

<b>2020</b> , Jan.-Mar.	Postdoctoral fellow I. Institute for Theoretical Physics, Universität Hamburg, Germany
<b>2013</b> , Jul. - <b>2019</b> , Dec	Postdoctoral fellow CFEL-DESY Theory Division, Center for Free Electron Laser Science and Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany
<b>2009</b> , Aug. - <b>2013</b> , Jun.	PhD fellow within Marie Curie ITN Institute of Quantum Theory of Materials at the Peter Grünberg Institute, Jülich Research Center, Jülich, Germany
<b>2006</b> , Oct. - <b>2009</b> , Jun.	Student assistant Institute of Spectroscopy RAS, Troitsk, Moscow, Russia

## Career breaks

- 07.04.2017 - 22.05.2018 (13,5 months), reason - maternity
- Career affected: during 2020 - 2021, reason - child-care duties during the pandemic

## Awards and Funding scholarships

- Freigeist Fellowship of the Volkswagen Foundation, 1.2 Million Euro for junior research group
- Call for W2-Professorship "Computational Materials Modelling" Brandenburgische TU Cottbus-Senftenberg Oct. 2023
- Successful mid-term evaluation of Junior-Professorship
- Grant to host of Prof. David. A. Reis from Stanford Pulse Institute, USA, within DESY Stephenson Distinguished Visitor Programme 2017
- Team member of SACLA/SPring-8 Basic Development Program 2021, Japan
- Participant of the 70th Lindau Nobel Laureate Meeting
- Female physicist of the week selected by German Physical Society (Physikerin der Woche 2020)
- Marie Skłodowska-Curie PhD within Innovative Training Networks (ITN)

## Memberships of Scientific Societies

- Associate member of the Excellence Cluster CUI: Advanced Imaging of Matter, Germany, in the status Principal Investigator
- Member of Research Network dynaMENT Advanced, Germany
- Member of WaveMix Network in the status Principal Investigator

## Supervision Experience

- Postdoctoral researchers: Dmitrii Tumakov (Jul. 2023 – present)
- Doctoral students: Fahimeh Norouzi (Mar. 2023 – present), Maksim Radionov (Sep. 2022 – present), Rosmelle Kouemo (Jun. 2022 – present), Tatiana Bezryadina (Sep. 2021 – present), Nasrin Farahani (Apr. 2021 – present), Marvin Reuner (graduated 2023)
- Bachelor students: Lisanne Löher (graduated 2023), Tim Hansen (graduated 2022), Patrick Richter (graduated 2020)
- Supervision of research projects within education programmes: Vladislav Guskov, Summer Student, DESY Summer Student Programme (Jul. – Sep. 2018), Kersten Siebert, Gymnasium Teacher, DESY Professional Development Programme for Teachers (Oct. 2018)

## Teaching Experience

Institution: Universität Hamburg, Germany	
<ul style="list-style-type: none"> <li>▪ Winter Semester 2023/2024</li> <li>▪ Winter Semester 2022/2023</li> <li>▪ Winter Semester 2021/2022</li> <li>▪ Summer Semester 2021</li> <li>▪ Winter Semester 2020/2021</li> <li>▪ Summer Semester 2023</li> <li>▪ Summer Semester 2020</li> <li>▪ Winter Semester 2018/2019</li> </ul>	<p>Lecturer of the course "Computational physics with focus on time-dependent quantum mechanics" containing a lecture, an exercise group and a project class, in English</p> <p>Lecturer of Proseminar "Ultrafast phenomena" (<i>Proseminar is a special undergraduate course on an advanced research topic</i>), in English</p> <p>Leader of exercise groups for Physics II (Electrodynamics and Optics), in German</p> <p>Leader of an exercise group for Theoretical Physics I (Theoretical Mechanics, Electrodynamics and Relativistic Kinematics), in German</p>

## University didactic training

Made training by Hamburger Zentrum für Universitäres Lehren und Lernen (HUL)

- Lehrveranstaltungen kompetenzorientiert planen, Apr. 2021
- Präsentationsfolien lernförderlich gestalten, May 2021

## International Experience

- Research in Russia as a student assistant resulting in five publications
- Internship at Seagate Company, Londonderry, UK within the PhD Programme
- Host of Prof. David. A. Reis from Stanford Pulse Institute, Stanford, USA, within DESY Stephenson Distinguished Visitor Programme 2017

## Reviewing activities

- Reviewer of Established Program to Stimulate Competitive Research of Department of Energy US (2023), Remote Referee of ERC Advanced Grant (2022), Reviewer of Early Career Research Program of Department of Energy US (2022), reviewed for Studienstiftung des deutschen Volkes (German national study foundation) (2021)
- Reviewer of Journals: Nature, Science Advances, Physical Review Letters, Nanoscale Journal of the Royal Society of Chemistry (RSC), Chemical Science of the RSC, Physical Review Research, Physical Review B, Physical Review A, Journal of Magnetism and Magnetic Materials, Applied Sciences Journal, Journal Symmetry, Journal Photonics, Journal of Superconductivity and Novel Magnetism

## Service and Outreach for Research Community and Public

- Panel member at Herrenhausen Science Movie Night: Fürchte nichts - wie Frauen die Welt verstehen ("be not afraid - how women understand the world"), event for general public (2021)
- Consulted the DESY Human Resources Development Team on equal opportunity measures (2020)
- Contribution to the strategy brochure of the Committee Research with Synchrotron Radiation KFS, *Research with photons - light for the future, spring 2020*, p. 17
- Author of an article *A personal report: setting up a junior research group in Hamburg* in *Europhysics News* **50**, 5&6 (2019)
- Panel member at Jülich Career Day (2019)
- Panel member at the dynaMENT event for women "Third Party Funding" (2019)
- Presented research to the general public at the DESY Open Day (2015)

## Institutional responsibilities

- Organized a joint Universität Hamburg - EuXFEL PhD theory position 2023
- Member of Task Force "Research Data Management" of the Centre for Ultrafast Imaging
- Member of the examination committees in the doctoral procedure at Universität Hamburg, Germany: four committees since 2020
- Member of an appointment committee for a faculty position at Universität Hamburg, Germany
- Reviewer of Bachelor Theses: primary reviewer two times 2022, second reviewer two times 2022

## Invited talks, ★ - at international workshops

- ★ Workshop "Momentum microscopy at PETRA and FLASH" Hamburg, Germany (2024), *Theoretical description of attosecond imaging of electron dynamics with ultrashort x-ray pulses*
- Seminar at the Institute for Theoretical Solid State Physics at Humboldt-University Berlin, Germany (2024), *Theoretical description of attosecond imaging of electron dynamics with ultrashort x-ray pulses*
- ★ Atom 23: Focus days on "Research Highlights in the Eyes of Editors" organized by Editors of Phys. Rev. A, Dresden, Germany (2023), *Attosecond imaging of photoinduced dynamics in molecules using time-resolved photoelectron momentum microscopy*
- ★ 4th AttoChem Annual Meeting, Szeged, Hungary (2023), *Theoretical description of attosecond x-ray imaging of electron dynamics in molecules and crystals*

- ★ WavemiX Workshop, digital (2022), *Theoretical description of x-ray-optical wave mixing*
- ★ Workshop "Ultrafast Surface Dynamics 12" Benasque, Spain (2022), *Orbital movies at molecule-surface interfaces with ultrafast photoelectron momentum microscopy*
- ★ Workshop "Ultrafast Antiferromagnetic Writing" Mainz, Germany (2022), *Theoretical description of magnetic precessions during ultrafast laser excitation*
- NOA Lecture at Friedrich-Schiller-University Jena, Jena, Germany (2021), *Imaging electron dynamics with attosecond x-ray pulses*
- ★ Ultrafast X-ray symposium at Technical University of Denmark Department of Energy Conversion and Storage, Lyngby, Denmark (2020), *Imaging electron dynamics in molecules and crystals with ultrashort x-ray pulses*
- ★ Satellite Meeting to the DESY Photon Science Users' Meeting 2020 on "Light-Matter Interaction: Recent Advances in Theory", Hamburg, Germany (2020), *X-rays provide new insights into nonlinear optical response*
- Timmendorf Symposium of the Center for the Free Electron Laser Science, Timmendorf, Germany (2019), *X-rays provide new insights into nonlinear optical response*
- CFEL-DESY Theory Seminar, Hamburg, Germany (2016), *Imaging molecular electron dynamics with time- and angle-resolved photoelectron spectroscopy*
- CFEL-DESY Theory Seminar, Hamburg, Germany (2013), *Microscopic description of the inverse Faraday effect at subpicosecond time scales*
- Seminar at Institute for Experimental Physics 2, Dortmund Technical University, Dortmund, Germany (2012), *Theoretical study of spin-flip Raman scattering at femtosecond timescales*
- Seminar at Radboud University, Nijmegen, Netherlands (2011), *Quantitative description of the ultrafast inverse Faraday effect*

# Publication List

**Daria Gorelova** (born Popova)

Profiles: Daria Popova-Gorelova @  
(clickable links) [GoogleScholar](#), [ResearchGate](#), [Orcid](#)

Career breaks: Apr. 2017 – May 2018 and partially during 2020 – 2021

First/last author of 13 accepted/published papers in peer-reviewed journals

## Publications

### *Pre-prints*

1. Nasrin Farahani and **Daria Popova-Gorelova**, *Revealing fingerprints of valence excitons in x-ray absorption spectra with the Bethe-Salpeter equation*, arXiv:2402.05805, submitted (2024)
2. K. Baumgärtner, M. Nozaki, M. Reuner, N. Wind, M. Haniuda, C. Metzger, M. Heber, D. Kutnyakhov, F. Pressacco, L. Wenthaus, K. Hara, C.-H. Min, M. Beye, F. Reinert, F. Roth., S. Mahatha, A. Madsen, T. Wehling, K. Niki, **D. Popova-Gorelova**, K. Rosnagel, M. Scholz, *Multiplex movie of concerted rotational motion of molecules on a 2D quantum materials*, arXiv:2305.07773, submitted (2022)
3. **Daria Popova-Gorelova**, Vladislav Guskov, Robin Santra, *Atomic-scale imaging of laser-driven electron dynamics in solids using subcycle-resolved x-ray-optical wave mixing*, arXiv:2012.10334, submitted (2020)

### *Published/accepted*

4. **Daria Popova-Gorelova** and Robin Santra, *Microscopic nonlinear optical response: analysis and calculations with the Floquet-Bloch formalism*, accepted to **Structural Dynamics** (2024)
5. T. Hansen, T. Bezriadina and **D. Popova-Gorelova**, *Theoretical description of attosecond x-ray absorption spectroscopy of Frenkel exciton dynamics*, **Molecules** **28** (11), 4502 (2023)
6. M. Reuner and **D. Popova-Gorelova**, *Attosecond imaging of photo-induced dynamics in molecules using time-resolved photoelectron momentum microscopy*, **Phys. Rev. A** **107**, 023101 (2023)
7. K. Baumgärtner, M. Reuner, C. Metzger, D. Kutnyakhov, M. Heber, F. Pressacco, C.H. Min, T.R.F. Peixoto, M. Reiser, C. Kim, W. Lu, R. Shayduk, W. M. Izquierdo, G. Brenner, F. Roth, A. Schöll, S. Molodtsov, W. Wurth, F. Reinert, A. Madsen, **D. Popova-Gorelova**, and M. Scholz, *"Ultrafast molecular orbital tomography of a pentacene thin film using time-resolved momentum microscopy at a free-electron laser"*, **Nature Communications** **13**, 2741 (2022)
8. **Daria Popova-Gorelova**, Andreas Bringer, Stefan Bluegel, *Heisenberg representation of non-thermal ultrafast laser excitation of magnetic precessions*, **Phys. Rev. B** **104**, 224418 (2021)
9. **Daria Popova-Gorelova**, David A. Reis and Robin Santra, *Theory of x-ray scattering from laser-driven electronic systems*, **Phys. Rev. B** **98**, 224302 (2018)
10. **Daria Popova-Gorelova**, *Imaging Electron Dynamics with Ultrashort Light Pulses: A Theory Perspective*, **Applied Sciences** **8**, 318 (2018)
11. Arne Baumann, Sophia Bazzi, Dimitrios Rompotis, Oliver Schepp, Armin Azima, Marek Wieland, **Daria Popova-Gorelova**, Oriol Vendrell, Robin Santra, Markus Drescher, *Weak-field few-femtosecond VUV photodissociation dynamics of water isotopologues*, **Phys. Rev. A** **96**, 013428 (2017)

12. **Daria Popova-Gorelova**, Jochen Küpper and Robin Santra, *Imaging electron dynamics with time- and angle-resolved photoelectron spectroscopy*, **Phys. Rev. A** **94**, 013412 (2016)
13. **Daria Popova-Gorelova** and Robin Santra, *Imaging interatomic electron current in crystals with ultrafast resonant x-ray scattering*, **Phys. Rev. B** **92**, 184304 (2015)
14. **Daria Popova-Gorelova** and Robin Santra, *Imaging instantaneous electron flow with ultrafast resonant x-ray scattering*, **Phys. Rev. B** **91**, 184303 (2015)
15. A. Kákay, . . . , **D. Popova**, et al. Chapter *Nanosession: Spin Dynamics* in *Frontiers in Electronic Materials* (eds J. Heber, D. Schlom, Y. Tokura, R. Waser and M. Wuttig, 2013).
16. **Daria Popova**, Andreas Bringer, Stefan Bluegel, *Theoretical investigation of the inverse Faraday effect via a stimulated Raman scattering process*, **Phys. Rev. B** **85**, 094419 (2012)
17. **Daria Popova**, Andreas Bringer, Stefan Bluegel, *Theory of the inverse Faraday effect in view of ultrafast magnetization experiments*, **Phys. Rev. B** **84**, 214421 (2011)
18. **D.M. Popova**, B.N. Mavrin, A.V. Solovyov, *Ab initio investigation of electronic and vibrational properties of ZnS and ZnSe crystals by different XC-functionals*, **International Journal of Modern Physics B** **23**, 3643-3655 (2009)
19. E.A. Vinogradov, B.N. Mavrin, N.N. Novikova, V.A. Yakovlev, **D.M. Popova**, *Lattice dynamics of  $ZnSe_xS_{1-x}$  semiconductor crystals*, **Laser Physics** **19**, 162-170 (2009)
20. **D.M. Popova**, B.N. Mavrin, V.N. Denisov, E.A. Skryleva, *Spectroscopic and first-principles studies of boron-doped diamond: Raman polarizability and local vibrational bands*, **Diamond and Related Materials** **18**, 850-853 (2009)
21. B.N. Mavrin, V.N. Denisov, **D.M. Popova**, E.A. Skryleva, M.S. Kuznetsov, S.A. Nosukhin, S.A. Terentiev, V.D. Blank, *Boron distribution in the subsurface region of heavily doped IIb type diamond*, **Physics Letters A** **372**, 3914-3918 (2008)
22. V.D. Blank, V.N. Denisov, A.N. Kirichenko, N.A. Lvova, S.Y. Martyushov, B.N. Mavrin, **D.M. Popova**, M.Yu. Popov, E.V. Tat'yanin, A.A. Zakhidov, *Nanostructured superhard carbon phase obtained under high pressure with shear deformation from single-wall nanotubes HiPco*, **Physica B** **382**, 58-64 (2006)

## Other publications

1. **D. Popova**, *Microscopic description of the inverse Faraday effect at subpicosecond time scales* (Schriften des Forschungszentrums Jülich: Reihe Schlüsseltechnologien 83, 2014), ISBN 978-3-89336-962-1
2. Contribution to Broschüre des Komitees Forschung mit Synchrotronstrahlung [Forschung mit Photonen - Licht für die Zukunft, Frühjahr 2020](#), page 17
3. **D. Gorelova**, **Europhysics News** **50**, 5&6, [A personal report: setting up a junior research group in Hamburg](#), invited contribution