

Curriculum Vitae

PERSONAL DATA

Prof. DR. PATRICK RINKE

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Private address: Tietokatu 1, 00240 Helsinki, Finland

Born in Bad Oeynhausen, Germany

Marital status: married



QUALIFICATIONS AND CAREER

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|--------------------|--|
| 1999 - 2002 | Doctor of Philosophy (PhD) in physics, University of York, England (Thesis adviser: Rex Godby) |
| 1998 - 1999 | Master of Science (MSc) in physics, University of York, England (Thesis adviser: Rex Godby) |
| Since 2023 | Full Professor, Aalto University Department of Applied Physics, Finland |
| 2017 | August-Wilhelm Scheer visiting professorship, TU Munich, Germany |
| 2014 - 2023 | Associate Professor, Aalto University Department of Applied Physics, Finland |
| 2009 - 2014 | Group Leader, Fritz Haber Institute of the Max Planck Society, Theory Department., Germany (Director: Matthias Scheffler) |
| 2007 - 2009 | Post-doctoral scholar at Materials Dept., University of California Santa Barbara, USA (PI: Chris G. Van de Walle) |
| 2003 - 2007 | Research Associate, Fritz Haber Institute of the Max Planck Society, Theory Department, Germany (Director: Matthias Scheffler) |

ACTIVITIES IN THE RESEARCH SYSTEM

RESEARCH CONSORTIA MANAGEMENT EXPERIENCE

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|-------------------|---|
| Since 2022 | Project and work package leader in EU Marie Curie Training Network <i>European spectroscopy laboratory to model the materials of the future (EUSpecLab)</i> |
| Since 2022 | Project leader in Academy of Finland Center of Excellence <i>Virtual laboratory for molecular level atmospheric transformations (VILMA)</i> |
| Since 2018 | Project leader in four Academy of Finland Research Project consortia |
| 2015-2018 | Project leader in EU Centre of Excellence for Computing Applications <i>Novel Materials Discovery Laboratory (NOMAD)</i> |
| 2011-2019 | Project leader in the DFG collaborative research centre <i>Hybrid Inorganic/Organic Systems</i> |
| Since 2004 | Node leader and member of the Steering Committee of the <i>European Theoretical Spectroscopy Facility - EU e-13 network</i> |

- 2004-2008** Node leader and member of the Steering Committee of the EU Network of Excellence, *Nanoscale Quantum Simulations for Nanostructures and Advanced Materials (NANOQUANTA)*
- 2000-2004** Node leader and member of the Steering Committee of the EU research training network, *Nanoscale photon absorption and spectroscopy with electrons (NANOPHASE)*

CONFERENCE ORGANISATION (SELECTION OF 37 TOTAL)

- Feb 2023** Actively Learning Materials Science workshop, Aalto University, Finland
- May 2022** Young Researcher's Workshop on Machine Learning for Materials, Trieste, Italy
- Mar 2022** Finnish Physics Days – virtual event, Aalto University, Finland
- Jun 2020** GW goes large scale – virtual CECAM workshop, Aalto University, Finland

TEACHING

- 2016** Electronic Structure Theory and Application – Invited guest lecture series at Peking University, China
- 2015 - present** Prepared and taught four new lecture courses at Aalto University at Master's and PhD levels: Computational Physics, Density-Functional Theory for Practitioners and for Experts, Machine Learning for Materials Science
- 2014** Pedagogical Training Aalto University, 20 ECR
- Since 2007** Lecturer at 19 international summer schools

MENTORING AND SUPERVISION

- Present** 7 post-docs, 7 PhD students, 1 Master's student
- Total** 4 fellows, 30 post-docs, 25 PhD, and 10 Master's students
12 supervisees have gone on to professorships, 1 Emmy Noether fellow

ACADEMIC DISTINCTIONS

- 2017** August-Wilhelm Scheer visiting professorship at Technical University Munich
- 2009** Outstanding Postdoctoral Research Achievement Award – Solid State Lighting & Energy Center, University of California at Santa Barbara, USA
- 2007 - 2009** German Science Foundation (DFG) research scholarship
- 2003** Thesis Prize - Institute of Physics (UK) Computational Physics Group
- 2001 - 2002** German Academic Exchange Service (DAAD) annual PhD research scholarship
- 2001 - 2002** W. W. Smith foundation scholarship (York, UK)
- 1999 - 2002** Engineering & Physical Science Research Council, PhD studentship
- 1998 - 1999** DAAD annual MSc research scholarship

FUNDING (SELECTION FROM €4.5 M TOTAL)

- 2023 – 2025** Academy of Finland Research Project *AI software-based Material design for sustainable AI hardware (AI4AI)*: €257k

- 2022 – 2026** EU Marie Curie Training Network (ITN) *European spectroscopy laboratory to model the materials of the future (EUSpecLab)*: €286k
- 2022 – 2026** Academy of Finland Center of Excellence *Virtual laboratory for molecular level atmospheric transformations (VILMA)*: €473k
- 2022 – 2024** Academy of Finland Research Project *AI-guided CO₂ Conversion (Alcon)*: €405k

INVITED TALKS (196 TOTAL)

Japanese Materials Research Society Meeting (2023, 2013) • E-MRS Strasbourg (2023), Warsaw (2019) • Psi-k conference (2022, 2015, 2005) • MRS Virtual (2021) • ACerS EMA Virtual (2021) • IUMRS Korea (2018) • ACS Spring Meeting (2021, 2019, 2017) • APS March Meeting (2015, 2010) • DPG March Meeting (2012, 2009) • Intern. Conf. on Defects in Semicond. (2015)

ACADEMIC LEADERSHIP

- 2021** Invited expert at meeting of the AI4Sustainability European Parliament group
- 2019-present** Highlight Coordinator - Finnish Centre for Artificial Intelligence (FCAI)
- 2019-present** Advisory Board member of the FHI-aims electronic structure theory code
- 2019** Expert consultation on Energy white paper
- 2016-2020** Advisory Board member - Materials Platform at Aalto University
- 2016-2019** Board member - Finnish Physical Society
- 2015-2017** Advisory Board member - Centre for Quantum Engineering at Aalto
- 2015** Future Leadership Training at Aalto University

EDITORIAL ACTIVITIES AND REVIEW PANELS

- **Divisional editor** for *Physical Review Letters*
- **Editor** of *Frontiers in Chemistry* special issue, *Advanced Electronic Materials* special issue
- **Outstanding Referee** of *Physical Review* and *Physical Review Letters*
- **IOP trusted reviewer**
- **Distinguished Referee** of *European Physical Journal*
- **Editorial Board Member** of *Advanced Science*
- **Review editor** for *Frontiers in Physics*
- **Member of Inorganic, Materials, and Organic Chemistry Review Panel** of the Swedish Research Council (2023)
- **External reviewer** for the ERC Starting (2016) and ERC Consolidator Grants (2021), Molecular Foundry in Berkeley (USA)
- **Expert reviewer** for 14 national funding agencies including:
National Science Foundation (NSF), USA
Department of Energy (DOE), USA
Agence National de la Recherche (ANR), France
German Science Foundation (DFG)
Israeli Science Foundation (ISF)
- **Expert reviewer** for tenure track applications or promotions at:
University of York, UK

Carnegie Mellon University, USA
Technical University Munich, Germany

- **Reviewer** for ~70 journals including *Science*, *Science Advances*, *Nature Chemistry*, *Nature Communications*, *Nature Materials*, *Advanced Science*, *Advanced Materials*, *Physical Review Letters*

Review quality: reviews are 60% more substantial than the average review on Publons

PUBLICATIONS (WEB OF SCIENCE 25.03.2024 - TOTAL 155 – CITATIONS: 11,083 – AVERAGE: 71.5 – H-INDEX: 59)

- 1 *Nature Communications*, 13 *Physical Review Letters*, 3 *Advanced Science*, 1 *Advanced Functional Materials*, 3 *ACS Nano*, 8 *Applied Physics Letters*, 2 book chapters

EXAMINER AT DOCTORAL DEFENCE (17)

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|------------------|---|
| Dec 2023 | Gianluca Tirimbo, Eindhoven University of Technology, Netherlands |
| Jun 2023 | Ekaterina Baibuz, Helsinki University, Finland |
| Feb 2023 | Shuang Han, Technical University of Denmark |
| Dec 2022 | Arno Förster, Vrije Universiteit Amsterdam, Netherlands |
| Dec 2021 | Lukas Razinkovas, Vilnius University, Lithuania |
| May 2021 | Raquel Esteban-Puyuelo, Uppsala University, Sweden |
| May 2021 | Henrik Lund Mortensen, Aarhus University, Denmark |
| Oct 2020 | Anders Christian Riis-Jensen, Technical University of Denmark |
| May 2020 | Mario Gonclaves Marques, University of Halle, Germany |
| Dec 2016 | Sophie Chauvin, École Polytechnique, Paris, France |
| Dec 2016 | Jaakko Koskelo, Helsinki University, Finland |
| Jan 2016 | Björn Bieniek, Technical University, Berlin, Germany |
| Dec 2015 | Wael Chibani, Technical University, Berlin, Germany |
| July 2015 | Lydia Nemec, Humboldt University, Germany |
| Sep 2014 | Henry Lambert, University of Oxford, England |
| Dec 2013 | Falco Hüser, Technical University of Denmark |
| Oct 2012 | Matteo Guzzo, École Polytechnique, Paris, France |

PRE-EXAMINER OF PHD DISSERTATIONS (3)

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|-----------------|---|
| Sep 2022 | Christoffer Fridlund, Helsinki University, Finland |
| Mar 2021 | Jesper Byggmästar, Helsinki University, Finland |
| Nov 2017 | Alexander Odriazola Diaz, Tampere University of Technology, Finland |

OUTREACH AND SOCIETAL IMPACT

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|---------------------|---|
| 2018-present | My research group participates regularly in Aalto University's Shaking Up Tech event for girl high school students. |
| 2018-2021 | For one Academy of Finland funded project, Artificial Intelligence for Microscopic Structure Search (AIMSS), we developed an interactive exhibit that illustrates how machine learning optimizes molecules and materials, which consisted of a physical part – in which participants |

could assemble a molecule out of balls and sticks – and an interactive computer application.

- 2016-2018** The **DataSciMat** project received funding from the Academy of Finland, including a technoeconomic analysis of data-driven materials science, identifying data science as an important, emerging concept that will shape the future of materials science.
- Sep 2022** The AIMSS exhibition was presented at the Aalto University Family Day.
- 2020** Helsinki city's Central Library Oodi exhibited the AIMSS project as part of an interactive *Aalto Junior* outreach program for children.
- Dec 2019** AIMSS project outputs featured in the *Connecting the Dots* exhibition at Aalto University, a science and art exhibition revolving around the world of AI organized jointly by Aalto's Digi Platform and Finnish Center for Artificial Intelligence.
- Aug 2018** The DataSciMat and AIMSS projects were featured in *Arkhimedes*, the popular science journal of the Finnish Physical Society, with articles and cover images of the respective editions.
- Feb 2017** Guest speaker at Open Science day of my school, the Immanuel-Kant-Gymnasium, in Bad Oeynhausen, Germany