Curriculum Vitae

Pieter Marco Gunnink

1 Contact and Personal information

Name Dr. P.M. (Pieter) Gunnink

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2 Professional career

From Jul 2025 Marie Skłodowska-Curie Postdoctoral Fellow (MSCA PF), a personal grant of €190.000 awarded for the project "OpenMag" by the European Commision.

Under joint supervision of Dr. Alexander Mook and Prof. Jairo Sinova, at Johannes Gutenberg-University, Mainz, Germany.

Oct 2024–Jun 2025 Humboldt Postdoctoral Fellow, a personal fellowship awarded by the Alexander von Humboldt Foundation.

Under joint supervision of Dr. Alexander Mook and Prof. Jairo Sinova, at Johannes Gutenberg-University, Mainz, Germany.

Oct 2023–Sep 2024 Post-doc at Johannes Gutenberg-University, Mainz, Germany, working in the group of Dr. Alexander Mook.

My research interests are in non-Hermitian spintronics, working at the intersection of magnonics with other (quasi-)particles, with a focus on topology.

Sep 2019–Sep 2023 PhD Student at Utrecht University, under supervision of Prof. Rembert Duine.

3 Education

Sep 2023 PhD awarded in Theoretical Physics, Utrecht University, The Netherlands

PhD thesis title: *Non-equilibrium topology in magnonic systems*
Supervisor: Prof. dr. R.A. Duine
I worked on topology in magnon transport and electrical detection, exploring how to measure a variety of topological effects in magnon systems.

Jul 2019 MSc in Applied Physics, University of Twente, Enschede, The Netherlands

Master's thesis title: *Engineering a topological insulator*
Supervisor: Prof. dr. ir. A. Brinkman

Jul 2013 Pre-university secondary education, VWO-diploma at Johannes Fontanus College, Barneveld, The Netherlands

4 Publications

1. **Pieter M. Gunnink**, Rembert A. Duine, Alexander Mook, "Electrical non-Hermitian control of topological magnon spin transport", Physical Review B **110**, 014407 (2024).
2. **Pieter M. Gunnink**, Tim Ludwig, Rembert A. Duine, "Magnon spin capacitor", Applied Physics Letters **124**, 182404 (2024).
3. **Pieter M. Gunnink**, Tim Ludwig, Rembert A. Duine, "Charge conservation in spin-torque oscillators leads to a self-induced torque", Physical Review B **109**, 024408 (2024).
4. Tomas T. Osterholt, **Pieter M. Gunnink**, Rembert A. Duine, *Detection of Geometric Phases in Spin Waves using Nitrogen-Vacancy Centers*, (Dec. 13, 2023) arXiv:2312.08137.
5. **Pieter M. Gunnink**, Joren S. Harms, Rembert A. Duine, Alexander Mook, "Zero-Frequency Chiral Magnonic Edge States Protected by Nonequilibrium Topology", Physical Review Letters **131**, 126601 (2023).
6. **Pieter M. Gunnink**, Benedetta Flebus, Hilary M. Hurst, Rembert A. Duine, "Nonlinear dynamics of the non-Hermitian Su-Schrieffer-Heeger model", Physical Review B **105**, 104433 (2022).
7. **Pieter M. Gunnink**, Rembert A. Duine, Andreas Rückriegel, "Theory for electrical detection of the magnon Hall effect induced by dipolar interactions", Physical Review B **103**, 214426 (2021).
8. **Pieter M Gunnink**, Rosa Luca Bouwmeester, Alexander Brinkman, "Artificial oxide heterostructures with non-trivial topology", Journal of Physics: Condensed Matter **33**, 085601 (2020).
9. **Pieter M. Gunnink**, Rembert A. Duine, Andreas Rückriegel, "Electrical detection of unconventional transverse spin currents in obliquely magnetized thin films", Physical Review B **101**, 220407(R) (2020).

5 Conference contributions

Contributed talk *Surface Acoustic Wave (SAW) driven acoustic spin splitter in d-wave Altermagnetic thin films*, presented at Magnons on an Island 2024, Sep 19th 2024

Contributed talk *Magnon Spin Capacitor*, presented at ICM 2024, Jul 5th 2024

Poster *Electrical Non-Hermitian Control of Topological Magnon Spin Transport*, presented the SPICE Workshop-School on Quantum Spinoptics, Jun 19th 2024

Invited talk *Accessing topological magnonic excitations in non-equilibrium*, presented at the Transnational Round Table on Magnonics, High-Frequency Spintronics, and Ultrafast Magnetism (TRTM), Jun 4th 2024

Poster *Electrical Non-Hermitian Control of Topological Magnon Spin Transport*, presented at the SPICE Workshop Hybrid Correlated States and Dynamics in Quantum Materials, May 15th 2024

Contributed talk *Magnon Spin Capacitor*, presented at the DPG Spring Meeting 2024, Mar 19th, 2024

Poster *Zero-Frequency Chiral Magnonic Edge States Protected by Non- Equilibrium Topology*, presented at 803. WE-Heraeus-Seminar, Jan 2nd, 2024

Poster *Zero-Frequency Chiral Magnonic Edge States Protected by Non- Equilibrium Topology*, presented at Magnonics 2023, Jul 31st, 2023

Poster *Zero-Frequency Chiral Magnonic Edge States Protected by Non- Equilibrium Topology*, presented at Spin Caloritronics XII, May 22nd, 2023

Contributed talk *Low-energy magnonic edge states protected by non-equilibrium topology*, presented at Intermag 2023, May 15th, 2023

Contributed talk *Transport signatures of topologically protected edge states in topological magnon insulators*, presented at Physics@Veldhoven, April 4th, 2023

Poster *Non-linear dynamics of the non-Hermitian Su-Schrieffer-Heeger model*, presented at the Northern Lights Conference 2022, Oct 14th, 2022

Poster *A spin-torque oscillator array realization of the non-Hermitian SSH model*, presented at Physics@Veldhoven, Jan 25th, 2021

6 Other Publications

1. *Op weg naar een energiezuinge spingolfcomputer (On the way to an energy-efficient spin wave computer)*, NTvN April 2024. For this article I was awarded the 2nd prize in the annual PhD contest of the NTvN, together with the prize money of €750.

7 Seminars

1. *Keldysh description of dissipation in a nanomagnet driven into non-equilibrium by spin-transfer torque*, invited seminar at Karlsruhe Institute of Technology, April 29th, 2024
2. *Accessing topological magnonic excitations in non-equilibrium*, invited seminar at University of Kaiserslautern-Landau, November 28th, 2023
3. *Magnonic edge states protected by non-equilibrium topology*, talk given as part of the Condensed Matter Student Seminars, Utrecht University, February 14th, 2023
4. *Magnonic edge states protected by non-equilibrium topology*, invited seminar at JGU Mainz, January 26th, 2023
5. *Electrical detection of the magnon Hall effect*, talk given as part of the Condensed Matter Student Seminars, Utrecht University, December 2nd, 2020
6. *Electrical detection of transverse spin currents induced by spin waves in thin films with a tilted magnetic field*, talk given as part of the Condensed Matter Student Seminars, Utrecht University, March 2nd, 2020

8 Teaching and supervision

Spring 2022 Teaching assistant for bachelor's course *Quantum Nano World* at Utrecht University

Fall 2021 Teaching assistant for master's course *Statistical Field Theory* at Utrecht University

Fall 2020 Supervision of bachelor's thesis of M. Tharmalingam, *Effect of the Geometry of an Yttrium Iron Garnet Film on the Spin-Wave Dispersion Relation*

Fall 2020 Teaching assistant for master's course *Statistical Field Theory* at Utrecht University

Spring 2020 Teaching assistant for bachelor's course *Quantum Matter* at Utrecht University

9 Other Professional Activities

2024-now Member of Scientific Advisory Board (SAB) for *Transnational Round Table on Magnonics, High-Frequency Spintronics, and Ultrafast Magnetism* (TRTM)

May 7th, 2024 Talk entitled *Guide to successfully applying for a Marie Skłodowska-Curie fellowship* during the MSCA Masterclass organized by the *Forthem Alliance*.

Since 2023 Regular reviewer for physics journals, including Physical Review Letters, Physical Review B and New Journal of Physics

2021-2023 Member of PLaneT committee at Utrecht, organizing biweekly student talks

2020-2023 Chairman *Dutch Research School for Theoretical Physics* (DRSTP) PhD Student Council

10 References

Prof. dr. R.A. Duine (PhD thesis advisor)

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Dr. A. Mook (Postdoctoral supervisor)

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55128 Mainz
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