

Karin Everschor-Sitte

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Google Scholar Profile

Personal Information

Name Karin Everschor-Sitte (maiden name: Everschor)
Profession Professor for Theoretical Physics, University of Duisburg-Essen
Date of birth April 12th, 1984
Place of birth Cologne, Germany
Marital status Married, 2 children (born 2012 and 2015)



Scientific Research Interests

Magnetism, spintronics, spin textures, topology, Berry phases, emergent electrodynamics, plasmonics, topological insulators, physics-based unconventional computing and machine learning.

Academic Career and Education

University

- 04/2021 – present **Full Professor of Theoretical Physics**, *University of Duisburg-Essen, Faculty of Physics, Germany*
- 10/2019 – 11/2019 **Kavli Institute for Theoretical Physics, KITP program "Spin and Heat Transport in Quantum and Topological Materials"**, *USA*
- 11/2016 – 03/2021 **Head of Emmy-Noether research group "TWIST – Topological Whirls In SpinTronics"**, *Johannes Gutenberg University Mainz, Institute of Physics, Germany*
- 11/2015 – 10/2016 **Postdoctoral researcher**, *Johannes Gutenberg University Mainz, Institute of Physics, Mainz, Germany*, in the group of Prof. Dr. Jairo Sinova
part-time (50%): 11/01/2015 – 12/31/2015, (75%): 01/01/2016– 06/30/2016, (90%): 07/01/2016– 31/10/2016, due to parenting
- 10/2013 – 12/2013 **Kavli Institute for Theoretical Physics, KITP program "Spintronics: Progress in Theory, Materials, and Devices"**, *USA*
- 07/2013 – 10/2015 **Postdoctoral fellowship with DAAD**, *The University of Texas at Austin, Department of Physics, US*, in the group of Prof. Dr. Allan MacDonald
part-time (50%): 05/01/2015 – 10/31/2015, due to parenting
- 07/2012 – 06/2013 **Postdoctoral researcher**, *Technical University Munich, Physics Department E21, Germany*, in the group of Prof. Dr. Christian Pfleiderer
Maternity leave: 08/22/2012 – 11/28/2012, part-time (75%): 11/29/2012 – 12/31/2012 due to parenting
- 10/2010 – 12/2010 **Stay abroad in the group of Prof. Dr. Allan H. MacDonald**, *The University of Texas at Austin, Department of Physics, USA*
- 07/2009 – 06/2012 **Doctoral studies in Physics**, *University of Cologne, Institute for Theoretical Physics, Germany*
Dissertation: "Current-Induced Dynamics of Chiral Magnetic Structures – Skyrmions, Emergent Electrodynamics and Spin-Transfer-Torques"
Advisor: Prof. Dr. Achim Rosch
Grade: Summa cum laude (top grade)
- 10/2005 – 02/2006 **Semester abroad**, *University of Milan, Italy*
- 10/2003 – 06/2009 **Diploma in Physics**, *University of Cologne, Institute for Theoretical Physics, Germany*
Thesis: Manipulating Magnetic Structures in Chiral Metals by Currents
Advisor: Prof. Dr. Achim Rosch
Grade: With distinction (top grade)

- 10/2003 – 07/2008 **Diploma in Mathematics**, *University of Cologne, Mathematical Institute, Germany*
 Thesis: Asymptotisches Verhalten für eine Familie nichtlinearer elliptischer Differentialgleichungen im Minkowski Raum
 Advisor: Prof. Dr. Bernd Kawohl
 Grade: Excellent
School
- 1994 – 2003 **Secondary School**, *Dreikönigsgymnasium, Cologne, Germany*
 Abitur with grade 1.3 (comparable to A-level)
 2000 Participation at the “Schnupperuni Köln”
- 1990 – 1994 **Primary School**, *Catholic primary school, Cologne, Germany*

Honours, Awards, and Fellowships

- 03/2024 **Wohlfarth Lecturer**, Institute of Physics (IOP) and IEEE Magnetics Society UK & Ireland Chapter
- 04/2023 **Finalist of the 2023 Klung Wilhelmy Science Award for Physics**, Otto Klung Foundation at Freie Universität Berlin, in cooperation with the Dr. Wilhelmy Foundation
- 01/2019 **Female physicist of the week**, Equal Opportunities Working Group of German Physical Society (DPG)
- 03/2018 **Hertha-Sponer-Prize 2018**, of the German Physical Society (DPG) awarded to a female scientist for outstanding scientific work in the field of physics
- 06/2017 – 09/2025 **Member of AcademiaNet**, Expert Database of Outstanding Female Academics
- 06/2017 – 03/2021 **Fellow of the Elisabeth-Schiemann-Kolleg**, of the Max Planck Society
- 11/2016 – 10/2024 **Emmy Noether Award**, German Research Foundation (DFG)
- 10/2016 **Skyrmion Figure**, in Advanced Information about The Nobel Prize in Physics 2016: Topological phase transitions and topological phases of matter
- 07/2013 – 10/2015 **Postdoctoral fellowship of the German Academic Exchange Service**, (DAAD)
- 02/2012 **NanoCTM Outstanding Poster Award**, Joint First Prize presented to Karin Everschor, Awarded for one of the three best poster presentations at the International Physics School “Fundamentals of Nanoelectronics”
- 04/2011 **Best Poster Award**, Awarded for the best poster presentation at the Würzburg Fall School “Correlated Electrons at Surfaces and Interfaces”
- 01/2010 – 06/2012 **PhD Scholarship of the German Telekom Foundation**
- 04/2007 – 06/2012 **Member of the Bonn-Cologne Graduate School of Physics and Astronomy**, (BCGS)
- 06/2003 **High school award**, of the German Physical Society (DPG), proposed by the school administration in recognition of outstanding achievements in physics

Academic Service and Organizational Roles

Scientific Leadership

- 03/2025 – present **Deputy Head of the Magnetism Association (MA)**, of the German Physical Society (DPG)
- 07/2024 – present **Member of the Steering Committee of the CRC 1242**, University of Duisburg-Essen, Germany
- 07/2024 – present Member of the CRC 1242, University of Duisburg-Essen, Germany
- 11/2024 – present **Member of the Steering Committee of the Center for Nanointegration Duisburg-Essen (CENIDE)**, University of Duisburg-Essen, Germany
- 09/2024 **Member of the International Advisory Board**, of the 6th Ultrafast Magnetism Conference (UCM 2024), Berlin, Germany
- 01/2024 – present **Member of the Steering Committee and C04 cluster speaker of TRR 270 HoMMage**
- 04/2023 – present **Member of the Prize Committee of the Hertha-Sponer-Prize**

- 11/2022 – present Member of the CRC/TRR 270 HoMMage, University of Duisburg-Essen, Germany
- 10/2022 – present **PI in DFG/ANR project TOROID**, “Topological Rings: Hopfion Structure, Dynamics and Control”, University of Duisburg-Essen, Germany
- 06/2021 – present Member of the Center for Nanointegration Duisburg-Essen (CENIDE), University of Duisburg-Essen, Germany
- 09/2019 – 08/2022 **PI of the Mainz Institute of Multiscale Modeling (m³odel)**, Johannes Gutenberg University Mainz, Germany
- 07/2019 – 03/2021 Junior Faculty Member of the Max Planck Graduate Center (MPGC)
- 05/2019 – 12/2022 **PI in Excellence Project Dynamics and Topology (TopDyn)**, Johannes Gutenberg University Mainz, Germany
- 04/2019 – 03/2024 **Member of the Steering Committee of the interdisciplinary Center for Emergent Algorithmic Intelligence**
- 03/2019 – 03/2024 Member of Computational Science Mainz (CSM)
- 07/2018 – present Member of the Scientific Advisory Committee (SAC), of the European School on Magnetism
- 03/2018 – present **Member of the Arbeitsgemeinschaft Magnetismus (AGM) and division manager for the field of “spin-based computing”**, of the German Physical Society (DPG)
- 03/2018 – present **Member of the Prize Committee**, for the Dissertation & Master prize of the INNOMAG e.V.
- 02/2018 – 12/2023 Member of the CRC/TRR 173 SPIN+X, Johannes Gutenberg University Mainz, Germany
- 04/2017 – present **Member of the Steering Committee of the German Priority Programme “Skyrmions” SPP2137**
- 02/2017 – present **Scientific Coordinator of the Spin Phenomena Interdisciplinary Center (SPICE)**, Johannes Gutenberg University Mainz, Institute of Physics, Mainz, Germany
- 10/2016 – 06/2019 Associated Member of the “Graduate School of Excellence MAINZ – MAterial Science IN MainZ”, Johannes Gutenberg University Mainz, Institute of Physics, Mainz, Germany
- Organization of Scientific Events**
- 08/2025 **14th Joint European Magnetic Symposia (JEMS)**, Member of the Program Committee, Frankfurt, Germany
- 10/2024 **10. RUHR-Symposium 2024**, Artificial Intelligence for Functional Materials, University of Duisburg-Essen, Germany
- 10/2024 **SKYMAG2024**, Member of the Scientific Committee, Paris, France
- 07/2024 **SPICE Workshop**, Spin textures: Magnetism meets Plasmonics, Wasem, Germany
- 07/2024 **Physics Workshop**, How to Successfully Establish & Manage Your Emmy Noether-Group, Emmy Noether Meeting, Potsdam, Germany
- 07/2024 **International Conference on Magnetism (ICM2024)**, Member of the Program Committee, Bologna, Italy
- 10/2023 **Workshop on Recent advances in magnetic skyrmion research**, Radevormwald, Germany
- 05/2023 **Workshop on Artificial Intelligence**, CENIDE Conference, Bergisch Gladbach, Germany
- 03/2023 **Symposium**, Topological Superconductor-Magnet Heterostructures, DPG Spring Meeting, Dresden, Germany
- 01/2023 **CENIDE Workshop on Artificial Intelligence**, University of Duisburg-Essen, Germany
- 11/2022 **2022 Magnetism and Magnetic Materials Conference (MMM2022)**, Member of the Program Committee, Minneapolis, USA
- 08/2022 **International Conference on Magnetism and Superconducting Materials (MSM22)**, Scientific Program Committee, University of Duisburg-Essen, Germany
- 11/2021 **25. Deutsche Physikerinnentagung 2021**, Virtual Workshop, University of Duisburg-Essen, Germany
- 04/2021 **Korrelationstage 2021**, Virtual Workshop, Scientific coordinator, Max Planck Institute for the Physics of Complex Systems, Dresden

- 09/2020 **Network female physicists**, Leading a discussion group, online
- since 05/2020 **On-line SPICE-SPIN+X Seminars**, co-organisator, online
- 10/2019 **CECAM school**, co-organizer, Applied mathematics and machine learning perspectives on Big Data Problems in Computational Sciences, Mainz, Germany
- 09/2019 **Skymionics Workshop for Young Researcher**, SPICE co-organizer, Mainz, Germany
- 03/2019 **Focus topic**, 10.1.7 Chiral Spin Textures and Dynamics, Including Skyrmions Spin transport, co-organizer, APS March meeting, Boston, USA
- 01/2019 **2019 Joint MMM-Intermag Conference**, Member of the Program Committee, Washington, D.C., USA
- 11/2018 **Symposium**, Materials for Manipulating and Controlling Magnetic Skyrmions, 2018 MRS Fall meeting, Boston, Massachusetts
- 10/2018 **SPICE Workshop**, Spintronics meets Neuromorphics, Mainz, Germany
- 09/2018 **CECAM school**, co-organizer, Machine Learning in Scientific Computing, Nierstein, Germany
- 09/2018 **9th Joint European Magnetic Symposia (JEMS)**, Member of the local committee, Mainz, Germany
- 08/2018 **Satellite Workshop for JEMS**, Mainz, Germany
- 07/2017 **SPICE Workshop**, Topology Matters, Johannes Gutenberg University, MITP, Mainz, Germany
- 07/2017 **Network Meeting**, SPP2137 Skymionics, Johannes Gutenberg University, MITP, Mainz
- 03/2017 **Symposium**, Antiferromagnetic Spintronics, DPG Spring Meeting, Dresden, Germany
- 03/2017 **Tutorial**, Micromagnetic Simulations, DPG Spring Meeting, Dresden, Germany
- 03/2016 **Tutorial**, Spin Hall Effect and Spin-Orbit Torques, DPG Spring Meeting, Regensburg, Germany
- 05/2010 **PhD Workshop**, MnSi, Technical University Munich, Germany

Scientific Reviewing and Editorial Roles

- For journals Review of Modern Physics, Science, Nature, Nature Physics, Nature Nanotechnology, Nature Materials, Nature Electronics, Nature Communications, Nanotechnology, Physical Review Letters, Physical Review B, Physical Review E, Acta Materialia, New Journal of Physics, Proceedings of the Royal Society A, Advanced Science, Advanced Materials, Applied Physics Letters, Communication Physics, Journal of Magnetism and Magnetic Materials, Journal of Applied Physics, Neuromorphic Computing and Engineering, Journal of Physics D, CRC Press, Taylor & Francis Group LLC, AIP advances, IEEE Access, IEEE Electron Device Letters, Journal of the Electron Devices Society, Journal of Science: Advanced Materials and Devices, Advanced Electronic Materials, Journal Physics (MDPI), APL Materials
- Proposal reviewing for the German Reserach Foundation, the European Research Council, the Alexander von Humboldt Foundation, the Research Foundation – Flanders (FWO), the Department of Energy Office of Science (US), the Royal Society and the Körber-Stiftung
- Editor tasks Guest editor for a Special Topic “Advanced Materials for AI Hardware and Advanced Computing” in APL Materials, Guest editor for a Special Topic “Energy-Efficient Memory Materials” in APL Materials and APL Energy, Guest editor for a focus issue on “topological solitons for neuromorphic systems” in Neuromorphic Computing and Engineering (2024), Principal Editor for MRS Advances (2019)

Patents

- EP3751472B1, US12389804B2, JP7564554B2, CN114008639B, WO2020249630A1 **Patent in the field of topological quantum computation**, “*Method and device for providing anyons, use of the device*”, J. Nothhelfer, K. M. D. Hals, K. Everschor-Sitte, and M. Rizzi
- DE102023131706A1 **Patent application**, “*Bestimmen einer optimalen Bewegungsbahn*”, K. Everschor-Sitte, A. Pignedoli and B. Dörschel

Publications and Preprints

Submitted and Preprints

- [79] **Editorial**, J. Sort, K. Everschor-Sitte, D. Ielmini, M. Lira-Cantu
Energy-Efficient Memory Materials
- [78] **arXiv:2508.10640**, M. Winter, A. Pignedoli, M. C. Rahn, A. S. Sukhanov, B. Achinuq, J. R. Bollard, M. Azhar, K. Everschor-Sitte, D. Pohl, S. Schneider, A. Tahn, V. Ukleev, M. Valvidares, A. Thomas, D. Wolf, P. Vir, T. Helm, G. van der Laan, T. Hesjedal, J. Geck, C. Felser, B. Rellinghaus
Field-induced condensation of π to 2π soliton lattices in chiral magnets
- [77] **Contribution**, M. Azhar, K. Everschor-Sitte
Topology in 3D: From Skyrmions to Hopfions and Mixed Topology States - A Unified Framework for Characterizing Magnetic Textures
- [76] **arXiv:2411.06929**, M. Azhar, S. C. Shaju, R. Knapman, A. Pignedoli, K. Everschor-Sitte
3D Magnetic Textures with Mixed Topology: Unlocking the Tunable Hopf Index
- [75] **arXiv:2410.18356**, H. Youel, D. Prestwood, O. Lee, T. Wei, K. D. Stenning, J. C. Gartside, W. R. Branford, K. Everschor-Sitte, H. Kurebayashi
PRCpy: A Python Package for Processing of Physical Reservoir Computing
- [74] **Contribution to the 38th NeurIPS Conference (2024)**, Contribution Nr. 75, K. H. M. Klos, J. Disselhoff, K. Everschor-Sitte, F. Schmid
Reconstructing micro-magnetic vector fields based on topological charge distributions via generative neural network systems
- [73] **arXiv:2409.10290**, A. Majumdar, K. Everschor-Sitte
Neuromorphic Spintronics, Book chapter in *Artificial Intelligence and Intelligent Matter*
- [72] **bioRxiv:2024.05.29.596528**, S. Sys, A. Ceron-Noriega, A. Kerber, S. Weißbach, S. Schweiger, M. Wand, K. Everschor-Sitte, S. Gerber
Chromatin Capture Upsampling Toolbox (CCUT): A Versatile and Unified Framework to Train Your Chromatin Capture Deep Learning Models

Published

- [71] **Microscopy and Microanalysis 31, 7, 1747 (2025)**, B. Rellinghaus, A. Thomas, M. Winter, M. C. Rahn, A. S. Sukhanov, A. Than, S. Schneider, A. Pignedoli, M. Azhar, K. Everschor-Sitte, J. Geck, G. van der Laan, T. Hesjedal, P. Vir, C. Felser, D. Pohl
Combining In-Situ Transport Experiments with Real Space Imaging and Resonant Elastic X-Ray Scattering: Chiral Magnets in a Transmission Electron Microscope
- [70] **META 2025**, Proceedings of the 15th International Conference on Metamaterials, Photonic Crystals, and Plasmonics, 106-107 (2025), M. Azhar, R. Knapman, P. Gessler, A. Neuhaus, P. Dreher, F. Meyer zu Heringdorf, K. Everschor-Sitte
Rethinking Linking – Topology in Magnetism and Plasmonics
- [69] **Book chapter in Physik: Erkenntnisse und Perspektiven, 81–82 (2025)**, K. Everschor-Sitte, C. Pfeleiderer
Robuste Magnetische Muster; <https://physik-erkenntnisse-perspektiven.de/>
- [68] **Physical Review B 111, 134408 (2025)**, R. Knapman, M. Azhar, A. Pignedoli, L. Gallard, R. Hertel, J. Leliaert, K. Everschor-Sitte
Numerical Calculation of the Hopf Index for 3D Magnetic Textures
- [67] **Oberwolfach Reports 21, 1058-1062 (2024)**, K. Everschor-Sitte
Understanding and computing with physical patterns in Workshop Report 2024, 18: Mini-Workshop on Mathematics of Entropic AI in the Natural Sciences
- [66] **Nature Communications 15, 7377 (2024)**, K. Stenning, J. Gartside, L. Manneschi, C. Cheung, T. Chen, A. Vanstone, J. Love, H. Holder, F. Caravelli, H. Kurebayashi, K. Everschor-Sitte, E. Vasilaki, W. Branford
Neuromorphic overparameterisation and few-shot learning in multilayer physical neural networks

- [65] **META 2024**, Proceedings of the 14th International Conference on Metamaterials, Photonic Crystals, and Plasmonics, 616–617 (2024), M. Azhar, S. C. Shaju, V. P. Kravchuk, M. Garst, [K. Everschor-Sitte](#)
Screw dislocations in chiral magnets
- [64] **Physical Review B** **109**, 224431 (2024), S. Jenkins, T. Wagner, O. Gomonay, [K. Everschor-Sitte](#)
Revealing ultrafast domain wall motion in Mn₂Au through permalloy capping
- [63] **Nature Reviews Physics** **6**, 455 (2024); **Featured on the cover of Nature Reviews Physics, Vol. 6, Issue 7 (2024)**. UDE Press Release., [K. Everschor-Sitte](#), A. Majumdar, K. Wolk, D. Meier
Topological magnetic and ferroelectric systems for reservoir computing.
- [62] **Physical Review B** **109**, L201110 (2024), S. Díaz, J. Nothhelfer, K. Hals, [K. Everschor-Sitte](#)
Manipulating vortices with domain walls in superconductor-ferromagnet heterostructures
- [61] **Communications Physics** **7**, 151 (2024), R. Knapman, T. Tausendpfund, S. Díaz, [K. Everschor-Sitte](#)
Spacetime magnetic hopfions: from internal excitations and braiding of skyrmions
- [60] **Physik in unserer Zeit** **55**, 183 (2024), [K. Everschor-Sitte](#), R. Msiska, A. Majumdar
Rechnen mit magnetischen Wirbeln
- [59] **Nano Futures** **8**, 012001 (2024), G. Finocchio, J. Incorvia, J. Friedman, Q. Yang, A. Giordano, J. Grollier, H. Yang, F. Ciubotaru, A. Chumak, A. Naeemi, S. Cotofana, R. Tomasello, C. Panagopoulos, M. Carpentieri, P. Lin, G. Pan, J. Yang, A. Todri-Sanial, G. Boschetto, K. Makasheva, V. Sangwan, A. Trivedi, M. Hersam, K. Camsari, P. McMahon, S. Datta, B. Koiller, G. Aguilar, G. Temporão, D. Rodrigues, S. Sunada, [K. Everschor-Sitte](#), K. Tatsumura, H. Goto, V. Puliafito, J. Åkerman, H. Takesue, M. Di Ventra, Y. Pershin, S. Mukhopadhyay, K. Roy, I. Wang, W. Kang, Y. Zhu, B. Kaushik, J. Hasler, S. Ganguly, A. Ghosh, W. Levy, V. Roychowdhury, S. Bandyopadhyay
Roadmap for unconventional computing with nanotechnology.
- [58] **Neuromorphic Computing and Engineering** **4**, 010202 (2024), D. Meier, J. Iñiguez, D. Rodrigues, [K. Everschor-Sitte](#)
Focus issue on Topological Solitons for Neuromorphic Systems
- [57] **Physical Review Applied** **20**, 044057 (2023), J. Love, R. Msiska, J. Mulkers, G. Bourianoff, J. Leliaert, [K. Everschor-Sitte](#)
Spatial analysis of physical reservoir computers
- [56] **Physical Review Letters** **131**, 156704 (2023), M. A. Lund, D. Rodrigues, [K. Everschor-Sitte](#), K. Hals
Voltage-Controlled High-Bandwidth Terahertz Oscillators Based On Antiferromagnets
- [55] **Applied Physics Letters** **122**, 260501 (2023), **Editor's Pick**, O. Lee, R. Msiska, M. A. Brems, M. Kläui, H. Kurebayashi, [K. Everschor-Sitte](#)
Perspective on unconventional computing using magnetic skyrmions.
- [54] **Advanced Intelligent Systems** **5**, 2200388 (2023), R. Msiska, J. Love, J. Mulkers, J. Leliaert, [K. Everschor-Sitte](#)
Audio Classification with Skyrmion Reservoirs
- [53] **Journal of Physics D: Applied Physics** **56**, 073001 (2023), B. Abad, K. Alberi, K. Ayers, S. Badhulika, C. Ban, H. Béa, F. Beron, J. Cairney, J. Chang, C. Charles, M. Creatore, H. Dong, J. Du, R. Egan, [K. Everschor-Sitte](#), C. Foley, A. Fontcuberta i Morale, M. Jung, H. Kim, S. Kurtz, J. Lee, D. Leitao, K. Lemmer, A. Marschilok, B. Mitu, B. Newman, R. Owens, A. Pappa, Y. Park, M. Peckham, L. Rossi, S. Shim, S. Siddiqui, J. Son, S. Spiga, S. Tsikata, E. Vianello, K. Wilson, H. Yuasa, I. Zardo, I. Zenyuk, Y. Zhang, Y. Zhao
The 2022 Applied Physics by Pioneering Women: A Roadmap
- [52] **Physik Journal November** (2022), Focus article (Brennpunktartikel), D. R. Rodrigues and [K. Everschor-Sitte](#)
Sein oder Nichtsein?

- [51] **Physical Review B** **105**, 224509 (2022), J. Nothhelfer, S. A. Díaz, S. Kessler, T. Meng, M. Rizzi, K. M. D. Hals and [K. Everschor-Sitte](#)
Steering Majorana braiding via skyrmion-vortex pairs: a scalable platform
- [50] **Physical Review Applied** **17**, 064015 (2022), R. Msiska, D. R. Rodrigues, J. Leliaert and [K. Everschor-Sitte](#)
Nonzero Skyrmion Hall Effect in Topologically Trivial Structures
- [49] **Nature Communications** **13**, 3144 (2022), R. Gruber, J. Zázvorka, M. A. Brems, D. R. Rodrigues, T. Dohi, N. Kerber, B. Seng, [K. Everschor-Sitte](#), P. Virnau and M. Kläui
Skyrmion pinning energetics in thin film systems
- [48] **Physical Review B** **105**, 174401 (2022), D. R. Rodrigues, A. Salimath, [K. Everschor-Sitte](#) and K. M. D. Hals
Dzyaloshinskii-Moriya Induced Spin-Transfer Torques in Kagome Antiferromagnets
- [47] **Physik Journal November** (2021), Focus article (Brennpunktartikel), Sebastián A. Díaz and [K. Everschor-Sitte](#)
Der Quanten-Twist
- [46] **Nature Communications** **12**, 6539 (2021), S. P. Bommanaboyena, D. Backes, L. S. I. Veiga, S. S. Dhesi, Y. R. Niu, B. Sarpi, T. Denneulin, A. Kovacs, T. Mashoff, O. Gomonay, J. Sinova, [K. Everschor-Sitte](#), D. Schönke, R. M. Reeve, M. Kläui, H.-J. Elmers and M. Jourdan
Readout of a antiferromagnetic spintronics systems by strong exchange coupling of Mn₂Au and Permalloy
- [45] **Communications in Applied Mathematics and Computational Science** **16**, 2 (2021), I. Horenko, D. Rodrigues, T. O’Kane and [K. Everschor-Sitte](#)
Scalable computational measures for entropic detection of latent relations and their applications to magnetic imaging
- [44] **Physical Review Letters** **127**, 157203 (2021), [Issue cover figure](#), D. Rodrigues, A. Salimath, [K. Everschor-Sitte](#), and K. Hals
Spin-wave driven bidirectional domain wall motion in kagome antiferromagnets
- [43] **Journal Physics D: Applied Physics** **54**, 404003 (2021), R. Knapman, D. Rodrigues, J. Masell and [K. Everschor-Sitte](#)
Current-induced H-shaped-skyrmion creation and their dynamics in the helical phase
- [42] **Physical Review Applied**. **16**, 014020 (2021), D. Rodrigues, J. Nothhelfer, M. Mohseni, R. Knapman, P. Pirro and [K. Everschor-Sitte](#)
Nonlinear dynamics of topological ferromagnetic textures for frequency multiplication
- [41] **Book chapter in Chirality, Magnetism and Magnetoelectricity, Springer, Pages 147-181** (2021), J. Masell, and [K. Everschor-Sitte](#)
Current-Induced Dynamics of Chiral Magnetic Structures: Creation, Motion, and Applications
- [40] **iScience** **24**, 3 (2021), D. R. Rodrigues, [K. Everschor-Sitte](#), S. Gerber and I. Horenko
A deeper look into natural sciences with physics-based and data-driven measures
- [39] **Journal of Magnetism and Magnetic Materials** **521**, 167506 (2021), G. Finocchio, M. Di Ventura, K. Y. Camsari, [K. Everschor-Sitte](#), P. K. Amiri and Z. Zeng
The promise of spintronics for unconventional computing
- [38] **BMC Genomics** **22**, 62 (2021), S. Weißbach, S. Jur’Evic Sys, C. Hewel, H. Todorov, S. Schweiger, J. Winter, M. Pfenninger, A. Torkamani, D. Evans, J. Burger, [K. Everschor-Sitte](#), H. May-Simera and S. Gerber
Reliability of genomic variants across different next-generation sequencing platforms and bioinformatic processing pipelines
- [37] **Physical Review B** **102**, 180412(R) (2020), M. A. Lund, [K. Everschor-Sitte](#), and K. M. D. Hals
Large Surface Magnetization in Noncentrosymmetric Antiferromagnets
- [36] **Physical Review Applied** **13**, 054020 (2020), D. Pinna, G. Bourianoff, and [K. Everschor-Sitte](#)
Reservoir Computing with Random Skyrmion Textures

- [35] **Journal of Physics D: Applied Physics: Applied Physics**, **53**, 453001 (2020), E. Vedmedenko, R. Kawakami, D. Sheka, P. Gambardella, A. Kirilyuk, A. Hirohata, C. Binek, O. Chubykalo-Fesenko, S. Sanvito, B. Kirby, J. Grollier, [K. Everschor-Sitte](#), T. Kampfrath, C-Y. You, and A. Berger
The 2020 Magnetism Roadmap
- [34] **Journal of Physics D: Applied Physics**, **53**, 363001 (2020), C. Back, V. Cros, H. Ebert, [K. Everschor-Sitte](#), A. Fert, M. Garst, T. Ma, S. Mankovsky, T. Monchesky, M. Mostovoy, N. Nagaosa, S. Parkin, C. Pfleiderer, N. Reyren, A. Rosch, Y. Taguchi, Y. Tokura, K. von Bergmann and J. Zang
The 2020 Skyrmionics Roadmap
- [33] **Physical Review B**, **101**, 224428 (2020), J. Masell, D. R. Rodrigues, B. F. McKeever, and [K. Everschor-Sitte](#)
Spin-transfer torque driven motion, deformation, and instabilities of magnetic skyrmions at high currents
- [32] **Physical Review B**, **101**, 224410 (2020), D. R. Rodrigues, N. Sommer, and [K. Everschor-Sitte](#)
Facilitating domain wall injection in magnetic nanowires by electrical means
- [31] **Nature Electronics** **3**, 360-370 (2020), J. Grollier, D. Querlioz, K. Y. Camsari, [K. Everschor-Sitte](#), S. Fukami, and M. D. Stiles
Neuromorphic Spintronics
- [30] **Physical Review B**, **101**, 064424 (2020), A. Okamoto, S. Murakami, and [K. Everschor-Sitte](#)
Berry curvature for magnetoelastic waves
- [29] **Physical Review B**, **101**, 054405 (2020), R. Zarzuela, V. K. Bharadwaj, K-W. Kim, J. Sinova, and [K. Everschor-Sitte](#)
Stability and dynamics of in-plane skyrmions in collinear ferromagnets
- [28] **Nature Electronics** **3**, 30 (2020), K. Litzius, J. Leliaert, P. Bassirian, D. Rodrigues, S. Kromin, I. Lemesch, J. Zazvorka, K-J. Lee, J. Mulkers, N. Kerber, D. Heinze, N. Keil, R. M. Reeve, M. Weigand, B. Van Waeyenberge, G. Schütz, [K. Everschor-Sitte](#), G. S. D. Beach, and M. Kläui
The role of temperature and drive current in skyrmion dynamics
- [27] **Physical Review Letters** **122**, 217201 (2019), K. Yamamoto, G. C. Thiang, P. Pirro, K-W. Kim, [K. Everschor-Sitte](#), and E. Saitoh
Topological characterization of classical waves: The topological origin of magnetostatic surface spin waves
- [26] **Physical Review B** **99**, 184429 (2019), V. P. Kravchuk, O. Gomonay, D. D. Sheka, D. R. Rodrigues, [K. Everschor-Sitte](#), J. Sinova, J. van den Brink, and Y. Gaididei
Spin eigen-excitations of an antiferromagnetic skyrmion
- [25] **Nature Nanotechnology** **14**, 658 (2019), J. Zázvorka, F. Jakobs, D. Heinze, N. Keil, S. Kromin, S. Jaiswal, K. Litzius, G. Jakob, P. Virnau, D. Pinna, [K. Everschor-Sitte](#), A. Donges, U. Nowak, and M. Kläui
Thermal skyrmion diffusion applied in probabilistic computing
- [24] **Physical Review Letters** **119**, 127203 (2019), K-W. Kim, S-W. Lee, J-H. Moon, G. Go, A. Manchon, H-W. Lee, [K. Everschor-Sitte](#), and K-J. Lee
Unidirectional Magnon-Driven Domain Wall Motion Due to the Interfacial Dzyaloshinskii-Moriya Interaction
- [23] **Physical Review B** **99**, 104422 (2019), K. M. D. Hals and [K. Everschor-Sitte](#)
Twists in Ferromagnetic Monolayers With Trigonal Prismatic Symmetry
- [22] **Physical Review B** **99**, 054430 (2019), **Editor's suggestion**, B. F. McKeever, D. R. Rodrigues, D. Pinna, Ar. Abanov, J. Sinova and [K. Everschor-Sitte](#)
Characterizing breathing dynamics of magnetic skyrmions and antiskyrmions with the Hamiltonian formalism
- [21] **Journal of Applied Physics** **124**, 240901 (2018), **invited article**, **Issue cover figure**, [K. Everschor-Sitte](#), J. Müller, R. M. Reeve and M. Kläui
Perspective: Magnetic Skyrmions – overview of recent progress in an active research field

- [20] **Physik Journal September (2018), Issue cover figure**, Award-winning article, K. Everschor-Sitte
Let's twist again
- [19] **Physical Review B 98, 064429 (2018), Editor's suggestion**, J. Mulkers, K. M. D. Hals, J. Leliaert, M. V. Milošević, B. Van Waeyenberge and K. Everschor-Sitte
Effect of boundary-induced chirality on magnetic textures in thin films
- [18] **Physical Review B 97, 224427 (2018)**, K-W. Kim, K-W. Moon, N. Kerber, J. Nothhelfer and K. Everschor-Sitte
Asymmetric skyrmion Hall effect in systems with a hybrid Dzyaloshinskii-Moriya interaction
- [17] **Nature Electronics 1, 266-267 (2018)**, K. Everschor-Sitte, J. Sinova and Ar. Abanov
Painting and erasing skyrmions
- [16] **Physical Review B 97, 134414 (2018)**, D. R. Rodrigues, Ar. Abanov, J. Sinova and K. Everschor-Sitte
Effective description of domain wall strings
- [15] **Physical Review B 97, 104402(R) (2018)**, K-W. Kim, H-W. Lee, K-J. Lee, K. Everschor-Sitte, O. Gomonay and J. Sinova
Roles of chiral renormalization on magnetization dynamics in chiral magnets
- [14] **AIP Advances 8, 055602 (2018)**, G. Bourianoff, D. Pinna, M. Sitte and K. Everschor-Sitte
Potential implementation of Reservoir Computing models based on magnetic skyrmions
- [13] **Physics Review Applied 9, 014034 (2018)**, D. Prychynenko, M. Sitte, K. Litzius, B. Krüger, G. Bourianoff, M. Kläui, J. Sinova and K. Everschor-Sitte
A magnetic skyrmion as a non-linear resistive element - a potential building block for reservoir computing
- [12] **Physical Review Letters, 119, 127203 (2017)**, K. M. D. Hals and K. Everschor-Sitte
New Boundary-Driven Twist States in Systems with Broken Spatial Inversion Symmetry
- [11] **New Journal of Physics 9, 092001, FTC (2017), Fast Track Communications, appeared in journal's Highlights of 2017**, K. Everschor-Sitte, M. Sitte, T. Valet, J. Sinova, and A. Abanov
Skyrmion production on demand by homogeneous DC currents
- [10] **Physical Review B 95, 174408 (2017)**, D. R. Rodrigues, K. Everschor-Sitte, O. A. Tretiakov, J. Sinova and A. Abanov
Spin texture motion in antiferromagnetic and ferromagnetic nanowires
- [9] **Physical Review B 94, 064422 (2016)**, M. Sitte, K. Everschor-Sitte, T. Valet, D.R. Rodrigues, J. Sinova, and A. Abanov
Current-driven periodic domain wall creation in ferromagnetic nano-wires
- [8] **Physical Review B 92, 245118 (2015), Editor's suggestion**, K. Everschor-Sitte, M. Sitte, and A. H. MacDonald
Interaction correction to the magnetoelectric polarizability of Z_2 topological insulators
- [7] **Journal of Applied Physics 116, 083906 (2014)**, K. Everschor-Sitte, M. Sitte and A. H. MacDonald
Half-metallic magnetism and the search for better spin valves
- [6] **Journal of Applied Physics 115, 172602 (2014), invited and featured article, Issue cover figure**, K. Everschor-Sitte, and M. Sitte
Real-space Berry phases: Skyrmion soccer
- [5] **Physical Review B, 86, 054432 (2012)**, K. Everschor, M. Garst, B. Binz, F. Jonietz, S. Mühlbauer, C. Pfleiderer, and A. Rosch
Rotating skyrmion lattices by spin torques and field or temperature gradients
- [4] **Nature Physics 8, 301-304 (2012)**, T. Schulz, R. Ritz, A. Bauer, M. Halder, M. Wagner, C. Franz, C. Pfleiderer, K. Everschor, M. Garst, and A. Rosch
Emergent electrodynamics of skyrmions in a chiral magnet

- [3] **Physical Review Letters**, **107**, 217206 (2011), T. Adams, S. Mühlbauer, C. Pfleiderer, F. Jonietz, A. Bauer, A. Neubauer, R. Georgii, P. Böni, U. Keiderling, K. Everschor, M. Garst, and A. Rosch
Long-range crystalline nature of the skyrmion lattice in MnSi
- [2] **Physical Review B** **84**, 064401 (2011), K. Everschor, M. Garst, R. A. Duine, and A. Rosch
Current-induced rotational torques in the skyrmion lattice phase of chiral magnets
- [1] **Science** **330**, 1648 (2010), F. Jonietz, S. Mühlbauer, C. Pfleiderer, A. Neubauer, W. Münzer, A. Bauer, T. Adams, R. Georgii, P. Böni, R. A. Duine, K. Everschor, M. Garst, and A. Rosch
Spin Transfer Torques in MnSi at Ultralow Current Densities

Invited talks

- [96] 07/2025 **Keynote talk at META 2025**, *International conference series on Metamaterials, Photonic Crystals and Plasmonics, Torremolinos, Spain*, "Rethinking Linking - Topology in Magnetism and Plasmonics"
- [95] 07/2025 **Eindhoven University of Technology**, *Applied Physics Colloquium*, "Computing with magnetic whirls"
- [94] 06/2025 **Quantum Spintronics Conference**, *NTNU, Trondheim, Norway*, "Topological characterization of 3D magnetic textures"
- [93] 04/2025 **CRC 1238 Seminar**, *University of Cologne, Germany*, "Rethinking Linking - The Power of Connections!"
- [92] 03/2025 **DPG Symposium**, "*PhD Focus Session: Using Artificial Intelligence Tools in Magnetism*", *DPG Spring meeting Regensburg*, "Physics meets data - Decoding magnetic inhomogeneities through latent analysis"
- [91] 02/2025 **High Performance Computing Center Stuttgart (HLRS)**, "*The Future of Computing*" Seminar, invited by Dr. Nico Formanek, "Let's TWIST again – Computing with magnetic whirls"
- [90] 01/2025 **Wilhelm and Else Heraeus Seminar**, *X-tronics with Emerging Magnetic Materials*, *Physikzentrum Bad Honnef*, "2D + 1D = 3D, sometimes!?"
- [89] 09/2024 **SPP Skyrmionics Workshop**, *Kloster Seeon*, "Physical Reservoir Computing with Magnetic Skyrmions"
- [88] 07/2024 **Physics Workshop**, *Emmy Noether Annual Meeting 2024*
- [87] 04/2024 **Mini-Workshop: Mathematics of entropic AI in the natural sciences**, *MFO – Mathematisches Forschungsinstitut Oberwolfach*, "Understanding and computing with physical patterns"
- [86] 03/2024 **Wohlfarth Lecture**, *Magnetism 2024 conference, Loughborough*, "Let's TWIST again - Topological Whirls In SpinTronics"
- [85] 03/2024 **DPG Plenary Special Talks**, "*Vereinbarkeit von Beruf und Familie*", *DPG Spring meeting Berlin*
- [84] 01/2024 **Utrecht University**, *Physics Colloquium*, "Let's TWIST again - Topological Whirls In SpinTronics"
- [83] 11/2023 **GRK 264 Lecture Series**, *University of Stuttgart*, "Introduction to Topology in physics - from skyrmions to hopfions"
- [82] 08/2023 **5th Materials Chain International Conference (MCIC 2023)**, **Ruhr-Universität Bochum**, "*Materials Science Meets Artificial Intelligence: Advancements in Research and Innovation*", "In-materio reservoir computing based on magnetic skyrmions"
- [81] 08/2023 **13th Joint European Magnetic Symposia (JEMS)**, **Madrid**, *Symposium "Domain walls, skyrmions and spin-orbit related phenomena"*, "Topological magnetic structures and their dynamics"
- [80] 04/2023 **MRS Spring Meeting**, *Symposium "Functional Ferroic Materials for Unconventional Computing"* (online), "Reservoir Computing with Magnetic Skyrmions"
- [79] 04/2023 **TU Berlin**, *Physics Colloquium*, "Let's TWIST again - Topological Whirls In SpinTronics"

- [78] 04/2023 **Focus Session at NWO Physics**, *"Intelligent matter: physics-based approaches for new paradigms in computing"*, DPG Spring meeting Dresden, "Topological magnetic whirls for computing"
- [77] 03/2023 **DPG Symposium**, *"Topology in quantum and classical physics - from topological insulators to active matter"*, DPG Spring meeting Dresden, "Topological magnetic whirls for computing"
- [76] 02/2023 **CRC1242 Retreat**, *Heinrich Lübke Haus*, "Dynamics of topological electromagnetic excitations"
- [75] 12/2022 **MRS Fall Meeting**, *Symposium "Higher-Order Topological Structures in Real Space – From Charge to Spin" (online)*, "Topological magnetic structures and their dynamics"
- [74] 12/2022 **University of Siegen**, *General Physics Colloquium*, Bochum, Germany, invited by Prof. Dr. Carsten Busse, "Let's TWIST again – Topological Whirls In SpinTronics"
- [73] 11/2022 **CRC 1242 Seminar**, *University of Duisburg-Essen*, "Topology"
- [72] 10/2022 **International Conference on Quantum Materials and Technologies, ICQMT2022**, *Bodrum, Turkey*, "Topological magnetic structures and their dynamics"
- [71] 10/2022 **Max Planck Institute of Microstructure Physics**, *Workshop on Transformational Materials 4*, "Computing with magnetic whirls"
- [70] 08/2022 **CRC 1242 Internal Seminar**, *University of Duisburg-Essen*, "Topology"
- [69] 06/2022 **IEEE international microwave magnetics conference (ICMM2022)**, *online*, "Nonzero Skyrmion Hall effect in topologically trivial structures"
- [68] 05/2022 **CENIDE General Assembly**, *University of Duisburg-Essen, Duisburg*, "TWIST - Topological Whirls in Spintronics"
- [67] 03/2022 **Peta Spin Workshop on Topology in Magnetism and Ferroelectrics**, *online*, "Topological magnetic structures and their dynamics"
- [66] 01/2022 **Ruhr University Bochum**, *General Physics Colloquium*, Bochum, Germany, invited by Prof. Dr. Ilya Eremin, "Let's TWIST again – Topological Whirls In SpinTronics"
- [65] 02/2022 **University of South Florida**, *General Physics Colloquium (online)*, invited by Prof. Dr. Dmitry Voronin, "Let's TWIST again – Topological Whirls In SpinTronics"
- [64] 01/2022 **Technical University Dortmund**, *Lecture series of TRR 160, Dortmund/St. Petersburg*, invited by Prof. Dr. Götz Uehring, "Let's TWIST again – Topological Whirls In SpinTronics"
- [63] 12/2022 **Hereaus Seminar**, *"Hybrid Solid State Quantum Circuits, Sensors, and Metrology"*, Bad Honnef, Germany, "Reservoir Computing with Magnetic Skyrmions"
- [62] 12/2021 **International Conference on Advanced Materials and Devices 2021, ICAMD2021**, *(online)*, "Reservoir Computing with Magnetic Skyrmions"
- [61] 11/2021 **3rd Materials Chain International Conference, MCIC2021**, *(online)*, "Towards energy efficient magnetic in materio computing"
- [60] 09/2021 **Current Research in Magnetism, CRIM 2021**, *Magnetic Skyrmions*, *(online)*, "Magnetic whirls for unconventional computing and revealing latent information"
- [59] 07/2021 **W2S Online Seminar Series**, "Magnetic Skyrmions for Unconventional Computing and Revealing Latent Information"
- [58] 06/2021 **E-MRS Spring Meeting**, *Symposium "Neuro-inspired information processing: from novel materials concepts for neuromorphic computing to local processing of biological signals" (online)*, "Magnetic whirls for unconventional computing and revealing latent information"
- [57] 06/2021 **725. Heraeus Seminar**, *on "Magnetic Small Angle Neutron Scattering - from nanoscale magnetism to long-range magnetic structure"*, *(online)*, "Magnetic Skyrmions for Unconventional Computing and Revealing Latent Information"
- [56] 05/2021 **Physics Colloquium**, *University of Duisburg-Essen (online)*, Germany, "Magnetic Skyrmions and their dynamics – Banana kicks in magnetism"
- [55] 05/2021 **SPICE-SPIN+X Online Seminar Series**, "Magnetic Skyrmions for Unconventional Computing and Revealing Latent Information"
- [54] 05/2021 **CRC/TRR 270 HoMMage Colloquium**, *University of Duisburg-Essen (online)*, Germany, "Magnetic Skyrmions for Unconventional Computing and Revealing Latent Information"

- [53] 04/2021 **Photonics-Condensed-Matter Theory Colloquium**, *Bonn (online), Germany, invited by Prof. Dr. Hans Kroha*, "Skyrmions for Unconventional Computing and Revealing Latent Information"
- [52] 04/2021 **Virtual MRS Spring Meeting**, *online*, "Skyrmions for Unconventional Computing and Revealing Latent Information"
- [51] 02/2021 **Quantum Oxide Research Online Meeting**, *online*, "Magnetic Skyrmions for Unconventional Computing and Revealing Latent Information"
- [50] 02/2021 **Joint TRR 227 & CRC 1242 Workshop**, *online*, "Let's TWIST again – Topological Whirls In SpinTronics"
- [49] 12/2020 **6th CEMS Topical Meeting Online**, "*Complex Magnetism meets Topology: New Coupling Mechanisms and Responses*", "Magnetic Skyrmions for Unconventional Computing"
- [48] 11/2020 **Peta Spin Workshop on unconventional computing and spintronics**, *online*, "Magnetic Skyrmions for Unconventional Computing"
- [47] 11/2010 **65th annual conference on Magnetism and Magnetic Materials**, *online*, "Magnetic whirls for unconventional computing"
- [46] 09/2020 **Online Spintronics Seminar Series**, "Magnetic whirls for unconventional computing"
- [45] 07/2020 **University of Cologne, Condensed Matter Theory Seminar**, "Magnetic whirls for unconventional computing"
- [44] 02/2020 **nanoGUNE, Physics Colloquium, Donostia-San Sebastián, Spain, invited by Prof. Dr. Andreas Berger**, "'Let's TWIST again – Topological Whirls In SpinTronics'"
- [43] 01/2020 **Ruhr University Bochum, General Physics Colloquium, Bochum, Germany, invited by Prof. Dr. Ilya Eremin**, "Let's TWIST again – Topological Whirls In SpinTronics"
- [42] 12/2019 **First British-German Wilhelm and Else Heraeus Seminar, Skyrmions in Magnetic Materials, Physikzentrum Bad Honnef**, "Skyrmions for Unconventional Computing"
- [41] 10/2019 **KITP conference, Spintronics Meets Topology in Quantum Materials, Santa Barbara**, "Skyrmions for Unconventional Computing"
- [40] 09/2019 **DPG-Schülertagung 2019, Bad Honnef**, "Wirbel in Magneteten – Topologie, Skyrmionen und Bananenflanke"
- [39] 09/2019 **SPP Skyrmionics Workshop for Young Researcher, University of Mainz**, "Emergent Electrodynamics and Skyrmions for Unconventional Computing"
- [37] 07/2019 **Gordon Research Conference, Switzerland, les Diablerets**, "Skyrmions for Unconventional Computing"
- [36] 05/2019 **University of Tübingen, Physics Colloquia, Tübingen, Germany, invited by Nadine Cetin**, "Topology, Skyrmions and their dynamics - Banana kicks in magnetism"
- [35] 01/2019 **University Duisburg-Essen, Seminar**, "TWIST - Topologische Wirbel in der Spintronik"
- [34] 01/2019 **686. WE-Heraeus-Seminar, Spin Based Information Proceeding, Bad Honnef**, "Reservoir computing based on magnetic textures"
- [33] 09/2018 **Meeting of female physicists DPT, Carl von Ossietzky University of Oldenburg**, "Let's TWIST again – Magnetic Skyrmions"
- [32] 06/2018 **Workshop on Spintronics and Nanomagnetism for Neuromorphic Computing, Leeds, UK**, "Spintronics based in-materio computing – Reservoir computing with magnetic skyrmions"
- [31] 06/2018 **Seminar series: Physicists at work, University of Cologne**
- [30] 03/2018 **Prize talk at DPG Spring meeting, Berlin, Germany**, "Let's TWIST again – Magnetic Skyrmions"
- [29] 02/2018 **Nano-Magnonics workshop, Diemerstein, Germany**, "Skyrmion dynamics and excitations"
- [28] 02/2018 **Computational Brain Science workshop, Johannes Gutenberg University of Mainz**, "Magnetic Skyrmions for Unconventional Computin"
- [27] 11/2017 **Max Planck Institute for the Science of Light, Physics Colloquia, Erlangen, Germany, invited by Prof. Dr. Florian Marquart**, "Topology, Skyrmions and their dynamics - Banana kicks in magnetism"

- [26] 08/2017 **Workshop Skyrmionics: Materials, Phenomena and Applications**, Santa Fe, US, "Magnetic Skyrmions in Two Dimensions: Their Creation and Possible New Applications"
- [25] 05/2017 **PLANCKS**, *symposium at the international physics contest for bachelor and master students*, Graz, Austria, "Topology & Magnetic Skyrmions"
- [24] 05/2017 **SKYMAG**, *conference*, Paris, France, "Production of magnetic textures via spin currents"
- [23] 04/2017 **TU Dresden**, Germany, *PhD Seminar*, "Introduction to magnetic skyrmions"
- [22] 01/2017 **MAINZ Lecture Series**, *Johannes Gutenberg University of Mainz*, "Introduction to magnetic skyrmions – topological magnetic textures"
- [21] 12/2016 **University of Cologne**, *Condensed Matter Theory Seminar*, "Production of magnetic textures via spin currents"
- [20] 12/2016 **Nobel lecture organized by the jDPG**, *Johannes Gutenberg University of Mainz*, "Nobelvortrag: Nobelpreis in Physik 2016"
- [19] 11/2016 **University Hamburg**, *Seminar über Nahfeldgrenzflächenphysik und Nanotechnologie*, "Production and manipulation of magnetic textures via spin currents"
- [18] 07/2016 **DFG Bonn**, *Emmy-Noether application talk*, "TWIST – Topological Whirls In SpinTronics"
- [17] 10/2015 **University of Texas at Austin**, *United States Complex Quantum Systems Seminars*, "Interaction Correction to the Chern Simons Magnetoelectric Polarizability of Z_2 Topological Insulators"
- [16] 09/2015 **New York University**, *Condensed Matter Seminar*, New York, USA invited by Prof. Dr. Andrew Kent, "Interaction Correction to the Chern Simons Magnetoelectric Polarizability of Z_2 Topological Insulators"
- [15] 02/2014 **University of Kentucky**, *Department Colloquia*, Kentucky, USA invited by Prof. Dr. Lance DeLong, "Skyrmions and their dynamics – Banana kicks in magnetism"
- [14] 01/2014 **Current Driven Magnetisation Dynamics**, Leeds, UK, "Skyrmion Dynamics"
- [13] 12/2013 **Spintronics: Progress in Theory, Materials, and Devices**, Santa Barbara, California, USA, "Skyrmion Dynamics"
- [12] 11/2013 **58th annual conference on Magnetism and Magnetic Materials**, *Tutorial: "Berry Phases in Magnetism"*, Denver, Colorado, USA, "Real-Space Berry Phases – Skyrmion Soccer"
- [11] 06/2013 **Transregio 80**, *From Electronic Correlations to Functionality*, Munich, Germany, "Skyrmions, Topology and Interplay with Currents"
- [10] 03/2013 **jDPG Symposium**, *"Topological Defects in Magnetic Materials: from Devices to Cosmos"*, *DPG Spring meeting*, "Rotating skyrmion lattices by spin torques and field or temperature gradients"
- [9] 02/2013 **Johannes Gutenberg University of Mainz**, *Group seminar of Prof. Dr. Mathias Kläui*, "Rotating skyrmion lattices by spin torques and field or temperature gradients"
- [8] 12/2012 **520. Wilhelm und Else Heraeus Seminar**, *Spin-orbit-driven transverse transport phenomena*, *Physikzentrum Bad Honnef*, "Rotating skyrmion lattices by spin torques and field or temperature gradients"
- [7] 07/2012 **62nd Lindau Nobel Laureate Meeting (Physics)**, *Science Master Class with Prof. Albert Fert*, "Current-Induced Dynamics of Chiral Magnetic Structures; Skyrmions, Emergent Electrodynamics and Spin-Transfer Torques"
- [6] 06/2012 **Forschungszentrum Jülich (Research Center)**, *invited by Prof. Dr. Stefan Blügel*, "Current-Induced Dynamics of Chiral Magnetic Structures; Skyrmions, Emergent Electrodynamics and Spin-Transfer Torques"
- [5] 05/2012 **University of Duisburg-Essen**, *Group seminar of Prof. Dr. Jürgen König*, "Skyrmions, Spin Torques and Emergent Electrodynamics and Spin-Transfer Torques"
- [4] 12/2011 **University of Texas at Austin**, *United States*, *Group seminar of Prof. Allan H. MacDonald*, "Skyrmions, Spin Torques and Emergent Electrodynamics in chiral magnetic structures"
- [3] 11/2011 **Bonn**, *BCGS review*, five-minute science presentation "Skyrmions, spin torques and emergent electrodynamics"

- [2] 11/2010 **University of Texas at Austin, United States, Complex Quantum Systems Seminars**, "Spin transfer torques in chiral magnetic structures"
- [1] 07/2009 **University of Bonn, Group seminar Prof. Dr. Martin Weitz**, "Manipulating magnetic structures in chiral magnets by currents"

Teaching, didactics and further training

Supervision of students and postdoctoral researchers

Postdocs

- 05/2025 - present Robin Msiska
 06/2024 - present Ross Knapman
 08/2023 - present Maria Azhar
 07/2023 - present Atreya Majumdar
 03/2023 - present Jonas Nothhelfer, IT Coordinator
 12/2022 - 02/2023 Amin Khavasi
 07/2022 - 05/2024 Nasim Bazazzadeh
 01/2022 - 09/2022 Jonathan Atteia
 01/2021 - 03/2022 Sarah Jenkins
 12/2020 - 11/2022 Sebastián Díaz
 09/2018 - 08/2021 Davi Rodrigues
 09/2017 - 04/2020 Daniele Pinna
 09/2017 - 10/2018 Kyoung-Whan Kim
 01/2017 - 08/2017 Kjetil Hals

Graduate students

- 08/2024 - present Philipp Geßler
 03/2024 - present Kübra Kalkan
 11/2022 - present Sandra Shaju
 01/2022 - present Alessandro Pignedoli
 09/2021 - 11/2024 Tobias Wagner, co-supervised with Prof. Dr. Olena Gomonay
 01/2021 - present Kyra Klos, co-supervised with Prof. Dr. Friederike Schmid
 04/2020 - present Stanislav Sys, co-supervised with Prof. Dr. Susanne Gerber
 10/2020 - 04/2025 Robin Msiska, PhD thesis (2025) "Skyrmion Hall Effect in Topologically Neutral Structures Performance Studies of Skyrmion-Based Reservoir Computing"
 09/2020 - 06/2022 Jake Love
 10/2019 - 05/2024 Ross Knapman, PhD thesis (2024) "Creation and Manipulation of Topological Magnetic Textures in Chiral and Frustrated Magnets"
 04/2019 - 07/2023 Jonas Nothhelfer, PhD thesis (2023) "Topological excitations in magnets, superconductors, and magnet-superconductor heterostructures"
 08/2018 - 08/2019 Warlley Campos, visiting student
 06/2018 - 08/2019 Pedram Bassirian
 01/2018 - 10/2020 Valerie Rung
 09/2017 - 08/2018 Davi Rodrigues, visiting student
 05/2017 - 07/2017 Akihiro Okamoto, visiting student
 03/2017 - 10/2023 Venkata Krishna Bharadwaj, PhD thesis (2023) "Magnetic skyrmions in in-plane magnets: Stability, current-induced dynamics and excitations"
 11/2016 - 12/2020 Benjamin McKeever

Undergraduate students

- 05/2025 - 08/2025 Niklas Oettgen, Bachelor thesis (2025) "Stabilisation Of Hopfions In Bulk Magnets"

- 05/2025 - 08/2025 Finn Marten Boyer, Bachelor thesis (2025) "Exploring Reinforcement Learning for Magnetic Quasiparticle Transport in the presence of inhomogeneities"
- 04/2025 - 07/2025 Finn Feldkamp, Bachelor thesis (2025) "Stabilization of Magnetic Skyrmioniums in Thin Films"
- 07/2024 - 11/2024 Igor Polonskiy, Bachelor thesis (2024) "Approaching Physical Problems by Reinforcement Learning"
- 04/2024 - 03/2025 Lennart Nickel, Master thesis (2025) "EEG-Daten Analyse mittels (Physikalischem) Reservoir Computing"
- 04/2023 - 06/2023 Björn Dörschel, Bachelor thesis (2023) "Motion of anisotropic Skyrmions with a periodic field excitation"
- 02/2023 - 04/2023 Tayfun Sahin, Bachelor thesis (2023) "Influence of Temperature on Spin-Orbit Torque driven Skyrmion Dynamics"
- 01/2024 - 03/2024 Omer Fetai, Master thesis (2024) "In search of correlations between material inhomogeneities and magnetic material properties"
- 05/2022 - 08/2022 Omer Fetai, Bachelor thesis (2022) "Current-induced creation of domain walls in synthetic antiferromagnets"
- 02/2022 - 05/2022 Timon Tausendpfund, Bachelor thesis (2022) "From Skyrmions to Hopfions"
- 03/2021 - 12/2021 Lucas Görzen, Master student
- 11/2020 - 03/2021 Lucas Görzen, Bachelor thesis (2021) "Composite Topological Structures in Superconductor-Ferromagnet Heterostructures"
- 04/2020 - 09/2021 Tobias Wagner, Master thesis (2021) "Interface Effects in Chiral Magnetic Structures and Antiferromagnetic- Ferromagnetic Heterosystems"
- 04/2020 - 06/2021 Raphael Kromin, Master thesis (2021) "Domain wall injection in antiferromagnets"
- 04/2020 - 05/2021 Co-supervision of Bennet Karetta, Master thesis (2022) "Antiferromagnetic Domains in presence of Magnetoelastic Interactions"
- 11/2019 - 03/2022 Stephan Kessler, Master thesis (2022) "Numerical simulation of quantum operations with Majorana bound states"
- 11/2019 - present Co-supervisor of PhD student Mike A. Lund, primary supervisor Prof. Dr. Kjetil Hals
- 09/2019 - 04/2022 Lukas Holzbeck, Master thesis (2022) "Study of emergent topological magnetic defects by means of neural networks"
- 05/2019 - 07/2019 Keshav Tiwari, visiting student
- 05/2019 - 08/2019 Stephan Kessler, Bachelor thesis (2019) "Analyse der lokalen Zustandsdichte der Kitaev-Kette"
- 05/2019 - 07/2019 Lukas Holzbeck, Bachelor thesis (2019) "Pattern recognition in the 2D-Ising model with neural networks"
- 11/2018 - 05/2020 Timo Pulch, Master thesis (2020) "Thermally Driven Inversion of Nanomagnetic Logic"
- 04/2018 - 03/2019 Jonas Nothhelfer, Master thesis (2019) "Localized Majorana modes in superconductor-ferromagnet heterostructures - A path towards topological quantum computation"
- 06/2017- 05/2018 Andrew Fingers, Diploma student
- 11/2018- 10/2019 Nils Sommer, Master thesis (2019) "Critical domain wall behavior in chiral magnetic nanowires induced by spin polarized currents"
- 03/2017 - 05/2017 Nils Sommer, Bachelor thesis (2017) "Current-driven domain wall creation in ferromagnetic nanowires"
- 2012 Annika Kohlhaas, Bachelor thesis "Stability of magnetic whirls and helices in thin films", (assistant supervisor)
- 2012 Sarah Maria Schroeter, Bachelor thesis "Berry Phase Physics and Spin-Scattering in Time-Dependent Magnetic Fields", (assistant supervisor)
- 2011 Mascha Baedorf, Bachelor thesis "Berry Phase & Spin-Scattering", (assistant supervisor)

Mentoring

Since 2010 I serve as a mentor to numerous mentees in various programs, guiding them in developing their careers holistically. Through coaching, active listening, and tailored support, I enable them to strategically shape their short- and long-term goals, build networks, and achieve measurable success in academia and beyond.

Teaching courses and lectures

- SS 2025 Analytical Mechanics
- SS 2025 Advanced Seminar Theoretical Physics
- WS 24/25 Theoretical Physics I, Newtonian Mechanics and Special Relativity Theory
- SS 2024 Seminar Project Planning and Presentation Energy Science
- SS 2024 Advanced Seminar Theoretical Physics
- WS 23/24 Theoretical Physics IV, Statistical Physics
- SS 2023 Energy Systems Compared 2
- SS 2023 Advanced Seminar Theoretical Physics
- WS 22/23 Theoretical Physics III, Electrodynamics
- WS 22/23 Organization of Physics Colloquium
- SS 2022 Energy Systems Compared 2
- SS 2022 Seminar Project Planning and Presentation Energy Science
- SS 2022 Organization of Physics Colloquium
- WS 21/22 Theoretical Physics III, Electrodynamics
- WS 21/22 Organization of Physics Colloquium
- WS 20/21 Theoretical Physics I, Classical Mechanics, co-teaching with Prof. Dr. Jairo Sinova
- SS 2020 Mathematical Calculation Methods, co-teaching with Prof. Dr. Jairo Sinova
- SS 2019 Seminar presentation in the "Seminar zu Abschlussarbeiten"
- SS 2019 Supervising seminar talk for the Master seminar
- SS 2019 Bridge course Mathematics for Meteorologists, Physicists and Chemists, co-teaching with Prof. Dr. Jairo Sinova; 3 weeks course with 4 hours lectures and 4 hours exercises each day
- WS 18/19 Statistical Physics, co-teaching with Prof. Dr. Jairo Sinova
- WS 18/19 Seminar presentation in the "Seminar zu Abschlussarbeiten"
- 09/2018 DPG Summer School "Gauge Theory and Topological Quantum Matter", Lecture about "Emergent electrodynamics in magnetic systems with a focus on magnetic skyrmions"
- SS 2018 Supervising Master Academy project
- SS 2018 Bridge course Mathematics for Biologists and Geologists; 3 weeks course with 4 hours lectures and 4 hours exercises each day
- SS 2017 Seminar presentation in the "Seminar zu Abschlussarbeiten"
- 04/2017 48th IFF Spring School "Topological Matter", Lecture about "Emergent electrodynamics in magnetic systems with a focus on magnetic skyrmions"
- 01/2017 MAINZ Lecture about "Introduction to magnetic skyrmions – topological magnetic textures"
- Spring Term 2015 Substitute instructor in General Physics I
- Supervisor of seminar talks in the seminar "phenomena in the quantum world"
- Tutor, Classical Theoretical Physics II with PD Dr. Rochus Klesse
- SS 2011 Tutor, Quantum Physics with Prof. Dr. Achim Rosch
- SS 2010 Tutor, Quantum Physics with Prof. Dr. Matthias Vojta
- WS 09/10 Tutor, Statistical Mechanics with Prof. Dr. Thomas Nattermann
- SS 2009 Tutor, Classical Theoretical Physics I with PD Dr. Rochus Klesse
- WS 08/09 Tutor, Classical Theoretical Physics II with PD Dr. Ralf Bulla
- WS 07/08 Tutor, Mathematical Methods with Prof. Dr. Andreas Schadschneider

- SS 2007 Tutor, Electrodynamics with Prof. Dr. Matthias Vojta
 WS 06/07 Tutor, Quantum Mechanics with Prof. Dr. Achim Rosch
 SS 2006 Tutor, Informatics I, with Prof. Dr. Ewald Speckenmeyer

Educational workshops and further training attended

- 04/2024 Participation in UDE training "Account view/reporting via SAP portal – Budget" (digital)
 11/2023 Participation in HÜF-NRW Online training "Actively addressing and resolving conflicts – When two or more people argue" (digital)
 12/2022 Participation in the Nature Masterclass "Scientific Writing"
 08/2022 Participation in UDE training "Secure event management"
 09/2021 Participation in UDE training "Self- and time management as (newly appointed) professor - not only a question of time" (digital)
 06/2021 Participation in UDE training "Tasks, duties and responsibilities of managers in occupational health and safety" (digital)
 05/2021 Participation in DHV workshop "The professorship - rights and duties" (digital)
 10/2020 Participation in workshop about "Leadership Compact: Decision-making behavior of humans - explanations from a neurobiological perspective" offered by JGU (digital)
 07/2020 Participation in workshop about "Leadership Compact: Establishing effective and efficient team meetings" offered by JGU (digital)
 09/2018 Participation in workshop about "Supervision of Theses in MINT-subjects" offered by JGU
 06/2018 Participation in workshop about "How much difference is good for me? Breaking the German squareness" from the Irène Joliot Curie-Program offered by PRISMA
 06/2018 Participation in workshop about "Queen Bee Syndrome" from the Irène Joliot Curie-Program offered by PRISMA
 02/2018 Participation in workshop about "Leadership compact: leading criticism conversations" offered by JGU
 05/2017 Participation in three-day workshop "Cottrell Scholar Collaborative Bridges to Germany: Junior Faculty Professional Development Workshop"
 07/2016 Participation in workshop on "Activating teaching methods"
 01/2016- 05/2018 Participation in the program "Colleague coaching" at the Johannes Gutenberg University of Mainz
 08/2011 Participation in the two-day workshop on "Goal-oriented negotiation" offered by the German Telekom Foundation
 03/2011 Participation in the two-day workshop on "Leadership Skills" offered by the Bonn-Cologne Graduate School
 03/2010 & 09/2011 Participation in an educational training for mentors offered by CyberMentor

Outreach

- 08/2025 Summer University Natural Sciences and Engineering for pupils aged 15 and above at University of Duisburg-Essen, hands-on workshop "Spinfluencers wanted – Simulating magnetic patterns"
 08/2025 Summer University Natural Sciences and Engineering for pupils aged 15 and above at University of Duisburg-Essen, talk "Causing a Whirl – From Magnetism to Professorship"
 11/2024 Night of Physics "Patterns of Magic – Where Magnetism Meets Technology", University of Duisburg-Essen
 03/2024 Presentation at the DPG Spring meeting in Berlin "Work-life balance – Family and Physics and Dual Career"
 02/2024 EMA Women and Girls in Science
 09/2023 Night of Physics "The magical world of magnets", Owl soldering, University of Duisburg-Essen
 11/2022 Night of Physics "The magical world of magnets", University of Duisburg-Essen

- 11/2022 Participation in the BMBF-funded research project "WE! From the Lab to Small and Medium-Sized Businesses: Westphalian Women Inventors. Analysis of the potentials and visualization of innovative women in regional innovation ecosystems".
- 06/2022 Evening talk at Johannes Gutenberg University Mainz "Skyrmions The twist in the computer revolution?" together with Prof. Dr. Mathias Kläui
- 03/2022 Spring Academy of UA Ruhr Universities, Participation in Panel Discussion "Doctoral Supervision - A Special Relationship", online
- 11/2020 Presentation at the "Family and Physics" event, University of Cologne
- 10/2020 Presentation at the "Postdoc Day", Technical University Darmstadt, Johannes Gutenberg University Mainz and Goethe University Frankfurt
- 01/2020 Presentation at the "Tag der offenen Tür" within the interdisciplinary program Science AllStars, "Let's TWIST again – Wirbel in der Physik"
- 09/2019 Guest speaker at the DPG-Schülertagung 2019 in Bad Honnef, "Wirbel in Magneten – Topologie, Skyrmionen und Bananenflanken"
- 03/2019 Outreach activities for highschool students "Physik am Samstag", "Let's twist – Wirbel in Magneten" together with Prof. Dr. Mathias Kläui
- 01/2019 Presentation at the "Tag der offenen Tür" within the interdisciplinary program Science AllStars, "Let's TWIST again – Wirbel in der Physik"
- 06/2018 Presentation at the seminar "Physikerinnen und Physiker im Beruf" in Cologne
- 05/2017 PLANCKS, Symposiums speaker at the international physics contest for bachelor and master students, Graz, Austria, "Topology & Magnetic Skyrmions"
- 03/2017 Participation in the "Einstein Slam" at the DPG Spring Meeting in Dresden together with Tobias Meng, "Quanten-Lego und quirlige Magnete"
- 12/2016 Nobel lecture organized by the jDPG, "Nobelpreis in Physik 2016", Johannes Gutenberg University of Mainz
- 03/2016 Presentation at the DAAD event for postdocs and PhD students about my postdoc stay in Austin, Texas
- 01/2016 Presentation at the "Tag der offenen Tür", "Zukunftstechnologie Spin-Elektronik – die vielfältige Quantenwelt von Festkörpern"
- 05/2014 Participation at the Visualizing Science 2014 competition, organized by The College of Natural Sciences at The University of Texas at Austin
- 01/2011 Participation in the "3. Kölner Science Slam" (3rd Science Slam in Cologne)

Other

- 07/2023 – present First aider at the Faculty of Physics, University of Duisburg-Essen (regularly attending first aid courses since 2002)
- 09/2017 – 03/2021 First aider at the Institute of Physics, Johannes Gutenberg University Mainz (regularly attending first aid courses since 2002)
 - Since 2008 "Prüfungsweis Deutsches Sportabzeichen" (Examinant for the "German Sports Badge")
 - Since 2002 Certified Trainer in Gymnastics
 - 2001 – 2011 Swimming German Lifeguard badge
 - Since 2000 Active participation in different gymnastics and running competitions up to marathon
 - 2002 – 2004 Supervising tutor for youth summer camps

Prof. Dr. Karin Everschor-Sitte

Duisburg, Germany, September 2025