Karin Everschor-Sitte

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Researcher ID: O-3759-2016

Personal information

Name	Karin Everschor-Sitte (maiden name: Everschor)
Profession	Head of Emmy Noether research group "TWIST"
	Physicist, Ph.D. in Physics
Date of birth	April 12th, 1984
Place of birth	Cologne, Germany
Marital status	Married, 2 children (born 2012 and 2015)

Scientific interests

Magnetism, spintronics, skyrmions, domain-walls, current-induced magnetization dynamics, antiferromagnets, topology, Berry phases, emergent electrodynamics, topological insulators, quantum (anomalous) Hall effect, unconventional computing, neuromorphic computing, reservoir computing, stochastic computing, machine learning, data-based driven inference.

Scientific career and education

University

11/2016 – present	**Head of Emmy-Noether research group "TWIST – Topological Whirls In SpinTronics"**, *Johannes Gutenberg University Mainz, Institute of Physics, Mainz, 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
07/2013 – 10/2015	**Postdoctoral fellowship with DAAD**, *The University of Texas at Austin, Department of Physics, Austin, TX, 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, Garching, 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, Austin, Texas, USA*.
07/2009 – 06/2012	**Doctoral studies in Physics**, *University of Cologne, Institute for Theoretical Physics, Cologne, 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, Cologne, Germany*.
Thesis	Manipulation of magnetic structures by currents
Advisor	Prof. Dr. Achim Rosch
Grade	With distinction (top grade)
10/2003 – 07/2008	**Diploma in Mathematics**, *University of Cologne, Mathematical Institute, Cologne, Germany*.

Thesis	Asymptosisches 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

01/2019	**Physikerin der Woche**, Arbeitskreis Chancengleichheit of the DPG (German Physical Society).
03/2018	**Hertha-Sponer-Prize 2018**, of the DPG (German Physical Society) awarded to a female scientist for outstanding scientific work in the field of physics.
06/2017 – present	**Fellow of the Elisabeth-Schiemann-Kolleg**, of the Max Planck Society.
06/2017 – present	**Member of AcademiaNet**, Expert Database of Outstanding Female Academics.
11/2016 – present	**Emmy Noether Award**, *Deutsche Forschungsgemeinschaft (DFG)*, German Research Foundation.
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 with DAAD**, (German Academic Exchange Service).
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	**Scholarship of the Deutsche Telekom Stiftung**, (German Telekom Foundation).
04/2007 – 06/2012	**Member of the Bonn-Cologne Graduate School of Physics and Astronomy**, (BCGS).
06/2003	**One-year membership in the DPG e.V. and DPG Book Award 2003**, (proposed by the school administration in recognition of outstanding achievements in physics).

Participation in organizations and other professional activities

09/2019 – present	**PI of the Mainz Institute of Multiscale Modeling m^{3}odel at JGU Mainz**.
07/2019 – present	**Junior Faculty Member of Max Planck Graduate Center (MPGC)**.
05/2019 – present	**PI of the Topdyn Excellence Project at JGU Mainz**.
04/2019 – present	**Member of the Steering Committee of the interdisciplinary Center for Emergent Algorithmic Intelligence**.
03/2019 – present	**Member of Computational Science Mainz (CSM)**.
11/2018 – present	**Principal Editor**, *for MRS Advances*.
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)**, of the German Physical Society (DPG).
03/2018 – present	**Member of Prize Committee for the Dissertation and Master prize**, of the INNOMAG eV.
02/2018 – present	**Member of the SFB/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 – present **Associated Member of the "Graduate School of Excellence MAINZ – MAterial Science IN MainZ"**, Johannes Gutenberg University Mainz, Institute of Physics, Mainz, Germany.

Organization of conferences, workshops and schools

10/2019 **CECAM school**, co-organizer, Applied mathematics and machine learning perspectives on Big Data Problems in Computational Sciences, Mainz, Germany.

09/2019 **Skyrmionics Workshop for Young Researcher**, SPICE co-organizer, Mainz, Germany.

03/2019 **APS March meeting**, co-organizer of the Focus topic 10.1.7 Chiral Spin Textures and Dynamics, Including Skyrmions Spin transport, Boston, Massachusetts.

01/2019 **MMM/Intermag**, Member of the Program Committee, Washington DC.

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 **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.

07/2017 **Network Meeting**, SPP2137 Skyrmionics, Johannes Gutenberg University, MITP, Mainz.

03/2017 **Symposium**, Antiferromagnetic Spintronics, DPG Spring Meeting, Dresden.

03/2017 **Tutorial**, Micromagnetic Simulations, DPG Spring Meeting, Dresden.

03/2016 **Tutorial**, Spin Hall Effect and Spin-Orbit Torques, DPG Spring Meeting, Regensburg.

05/2010 **PhD Workshop**, MnSi, Technical University Munich.

Review activities

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, Proceedings A, Royal Society London, Applied Physics Letters, Communication Physics, Journal of Magnetism and Magnetic Materials, Journal of Applied Physics, Journal of Physics D, CRC Press, Taylor & Francis Group LLC, AIP advances, IEEE Access, Journal of the Electron Devices Society, Advanced Electronic Materials, APL Materials

Proposal reviewing for the Alexander von Humboldt Foundation, the Research Foundation – Flanders (FWO), The Department of Energy Office of Science (US)

Patents

06/2019 **Patent in the field of topological quantum computation**, pending at the European Patent Office, https://register.epo.org/application?number=EP19179910.

Publications and Preprints

Summary: Science (1), Nature Physics (1), Nature Nanotechnology (1), Nature Electronics (3), Physical Review Letters (4), Physical Review B (17), sum of times cited 2,043 (web of knowledge 17.01.2021).

[43] **arXiv:2012.11481**, *D. Rodrigues, J. Nothhelfer, M. Mohseni, R. Knapman, P. Pirro, K. Everschor-Sitte*.
Nonlinear dynamics of topological ferromagnetic textures for frequency multiplication

[42] **submitted**, *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 bioinformaticprocessing pipelines

[41] **submitted**, *D. R. Rodrigues, K. Everschor-Sitte, S. Gerber and I. Horenko*.
A deeper look into natural sciences with physics-based and data-driven measures

[40] **arXiv:2004.13535**, *J. Masell, and K. Everschor-Sitte*.
Current-Induced Dynamics of Chiral Magnetic Structures: Creation, Motion, and Applications

[39] **arXiv:1907.04601**, *I. Horenko, D. Rodrigues, T. O'Kane, K. Everschor-Sitte*.
Scalable detection of latent features across scales – from nanomagnets to astrophysics

[38] **Journal of Magnetism and Magnetic Materials 521, 167506 (2021)**, *G. Finocchio, M. Di Ventra, K. Y. Camsari, K. Everschor-Sitte, P. K. Amiri and Z. Zeng*.
The promise of spintronics for unconventional computing

[37] **Physical Review B 102, 180412 (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 (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. Lemesh, 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 09/2018, 49**, *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*.
The 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*.
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

[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 **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.*

[43] 01/2020 **Ruhr University Bochum**, *General Physics Colloquium, Bochum, Germany, invited by Prof. Dr. Ilya Eremin.*

[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 Magneten – Topologie, Skyrmionen und Bananenflanke".

[39] 09/2019 **SPP Skyrmionics Workshop for Young Researcher**, *University of Mainz*, "Emergent Electrodynamics and Skyrmions for Unconventional Computin".

[37] 07/2019 **Gordon Research Conference**, *Swiss, 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*, "Nobelvorlesung: 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

Currently Supervising three postdocs, seven PhD students, four Master and one Bachelor student

Postdocs.

01/2021 - present Sarah Jenkins

12/2020 - present Sebastián Díaz

09/2018 - present Davi Rodrigues

09/2017 - 04/2020 Daniele Pinna

09/2017 - 10/2018 Kyoung-Whan Kim, now senior researcher at the Center of Spintronics at the Korea Institute of Science an Technology

01/2017 - 08/2017 Kjetil Hals, now Professor at the University of Agder

Graduate students.

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 - present Robin Msiska

09/2020 - present Jake Love

10/2019 - present Ross Knapman

04/2019 - present Jonas Nothhelfer

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 - present Venkata Krishna Bharadwaj

11/2016 - 12/2020 Benjamin McKeever

Undergraduate students.

11/2020 - present Lucas Görzen, Bachelor student

04/2020 - present	Tobias Wagner, Master student
04/2020 - present	Raphael Kromin, Master student
11/2019 - present	Stephan Kessler, Master student
09/2019 - present	Lukas Holzbeck, Master student
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 student
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
03/2017- 10/2019	Nils Sommer, Master student
	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)

Students from other PIs.

04/2020 - present	Co-supervision of Bennet Karetta, Master student
11/2019 - present	Co-supervisor of PhD student Mike A. Lund, primary supervisor Prof. Dr. Kjetil Hals

Teaching courses and lectures

WS 2020	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 2018/19	Statistical Physics, co-teaching with Prof. Dr. Jairo Sinova
WS 2018/19	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 2009/10	Tutor, Statistical Mechanics with Prof. Dr. Thomas Nattermann

SS 2009 Tutor, Classical Theoretical Physics I with PD Dr. Rochus Klesse

WS 2008/08 Tutor, Classical Theoretical Physics II with PD Dr. Ralf Bulla

WS 2007/08 Tutor, Mathematical Methods with Prof. Dr. Andreas Schadschneider

SS 2007 Tutor, Electrodynamics with Prof. Dr. Matthias Vojta

WS 2006/07 Tutor, Quantum Mechanics with Prof. Dr. Achim Rosch

SS 2006 Tutor, Informatics I, with Prof. Dr. Ewald Speckenmeyer

Educational workshops and further training attended

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

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, "Nobelvorlesung: 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" (3$^{\mathrm{rd}}$ Science Slam in Cologne)

Other

Since 09/2017	First aider at the Institute of Physics, Johannes Gutenberg University Mainz (regularly attending first aid courses since 2002)
04/2010 - 10/2013	Mentor at the Online-Mentoring program CyberMentor
Since 2008	"Prüfausweis 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

Dr. Karin Everschor-Sitte Mainz, Germany, January 2021