

Scanning Probe Methods Group, Prof. Dr. Roland Wiesendanger

**Publications: Original Articles**

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**Robustness of Majorana modes to a disorder potential in atomic chains on a superconducting Rashba alloy***H. Jang, D. Crawford, K. That Ton, L. Schneider, J. Wiebe, M. Shimizu, H. O. Jeschke, S. Rachel, and R. Wiesendanger*, Nature Physics (2026) (2026)**Creation and motion of antiferromagnetic skyrmions by edge manipulation***A. Berg, T. Matthies, R. Wiesendanger, and E. Y. Vedmedenko*, J. Appl. Phys. **139** 183904 (2026)**Spin-polarized edge modes between different magnet-superconductor-hybrids***F. Zahner, F. Nickel, R. Lo Conte, T. Drevelow, R. Wiesendanger, S. Heinze, and K. von Bergmann*, Nature Commun. **17** 3457 (2026)**Effects of interlayer Dzyaloshinskii-Moriya interaction on the shape and dynamics of magnetic twin-skyrmions***T. Matthies, L. Rózsa, R. Wiesendanger, and E. Y. Vedmedenko*, npj Spintronics **4** 8 (2026)**Non-local detection of coherent Yu-Shiba-Rusinov quantum projections***K. T. Ton, C. Xu, I. Ioannidis, L. Schneider, T. Posske, R. Wiesendanger, D. K. Morr, and J. Wiebe*, Nature Physics **22** 54-60 (2026)**Strain-driven domain wall network with chiral junctions in an antiferromagnet***V. Saxena, M. Gutzeit, A. Rodriguez-Sota, S. Haldar, F. Zahner, R. Wiesendanger, A. Kubetzka, S. Heinze, and K. von Bergmann*, Nature Commun. **16** 10808 (2025)**Electronic properties of magnetic salophenes adsorbed on Ag(111)***B. Pieczyrak, M. Elsbach, L. Jurchyszyn, A. Schlenhoff, R. Wiesendanger, and M. Bazarnik*, J. Phys. Chem. C **129** 19917 (2025)**The non-collinear path to two-dimensional topological superconductivity***R. Brüning, J. Bedow, R. Lo Conte, K. von Bergmann, D. K. Morr, and R. Wiesendanger*, ACS Nano **19** 36215 (2025)**Symmetry aspects of Yu-Shiba-Rusinov bands in magnetic atomic chains on a superconductor***B. Nyári, Ph. Beck, A. Lászlóffy, L. Schneider, K. Palotás, L. Szunyogh, J. Wiebe, B. Újfalussy, and L. Rózsa*, Phys. Rev. B **112** 115414 (2025)**Image-potential states on a 2D graphene-ferromagnet hybrid: Enhancing spin and stacking sensing***M. Bazarnik and A. Schlenhoff*, ACS Nano **19** 25812 (2025)**Anisotropic atom motion on a row-wise antiferromagnetic surface***F. Zahner, S. Haldar, R. Wiesendanger, S. Heinze, K. von Bergmann, and A. Kubetzka*, Nature Communications **16** 4942 (2025)**Topological meron-antimeron domain walls and skyrmions in a low-symmetry system***R. Brüning, L. Rózsa, R. Lo Conte, A. Kubetzka, R. Wiesendanger, and K. von Bergmann*, Phys. Rev. X **15** 021041 (2025)**Antiferromagnetic order of topological orbital moments in atomic-scale skyrmion lattices***F. Nickel, A. Kubetzka, M. Gutzeit, R. Wiesendanger, K. von Bergmann, and S. Heinze*, npj Spintronics **3** 7 (2025)**Growth of an Fe buckled honeycomb lattice on Be(0001)***H. Osterhage, A. H. Khan, K. Oetker, R. Dao, S. Setayandeh, R. Wiesendanger, P. Burr, and S. Krause*, Surface Science **752** 122609 (2025)**Boundary conditions for and ferromagnetic resonance spectra of magnetic bilayers coupled by interlayer Dzyaloshinskii-Moriya interactions***E. Y. Vedmedenko, and M. Kostylev*, Phys. Rev. App. **23** 014047 (2025)**Majorana quasiparticles in atomic spin chains on superconductors***S. Rachel and R. Wiesendanger*, Physics Reports **1099** 1 (2025)**Preparation and readout of Majorana qubits in magnet-superconductor hybrid systems***D. Crawford, R. Wiesendanger, and S. Rachel*, Phys. Rev. B **110** L220505 (2024)

**Interlayer and interfacial Dzyaloshinskii-Moriya interaction in magnetic trilayers: First-principles calculations**

*T. Matthies, L. Rózsa, L. Szunyogh, R. Wiesendanger, and E. Y. Vedmedenko*, Phys. Rev. Res. **6** 043158 (2024)

**Magnet-superconductor hybrid quantum systems: a materials platform for topological superconductivity**

*R. Lo Conte, J. Wiebe, S. Rachel, D.K. Morr, and R. Wiesendanger*, La Rivista del Nuovo Cimento **47** (Issue 8) 453-554 (2024)

**Proximity-Induced Superconductivity in a 2D Kondo Lattice of an f-Electron-Based Surface Alloy**

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**Skyrmion dynamics in attractive and repulsive local magnetic fields**

*L. Reimers, A. F. Schäffer, E. Y. Vedmedenko, R. Lo Conte, J. Appl. Phys.* **136** 135302 (2024)

**Scanning tunneling spectroscopy study of proximity superconductivity in finite-size quantized surface states**

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**Large diversity of magnetic phases in two-dimensional magnets with spin-orbit coupling and superconductivity**

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**SP-STM study of the multi-Q phases in GdRu<sub>2</sub>Si<sub>2</sub>**

*J. Spethmann, N. D. Khanh, H. Yoshimochi, R. Takagi, S. Hayami, Y. Motome, R. Wiesendanger, S. Seki, and K. von Bergmann*, Phys. Rev. Mater. **8** 064404 (2024)

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**Phase Coexistence of Mn Trimer Clusters and Antiferromagnetic Mn Islands on Ir(111)**

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**Coupling of the triple-q state to the atomic lattice by anisotropic symmetric exchange**

*F. Nickel, A. Kubetzka, S. Haldar, R. Wiesendanger, S. Heinze, and K. von Bergmann*, Phys. Rev. B **108** L180411 (2023)

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**STM study of Nb(111) prepared by different methods**

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*L. Schneider, K. That Ton, I. Ioannidis, J. Neuhaus-Steinmetz, Th. Posske, R. Wiesendanger, and J. Wiebe*, Nature **621** 60 (2023)

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*L. Schneider, Ph. Beck, L. Rozsa, Th. Posske, J. Wiebe and R. Wiesendanger*, Nature Commun. **14** 2742 (2023)

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**Nano-scale collinear multi-Q states driven by higher-order interactions**

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**Spin revolution breaks time reversal symmetry of rolling magnets**

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**A cavity optomechanical locking scheme based on the optical spring effect**

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**Tuning the Properties of Zero-Field Room Temperature Ferromagnetic Skyrmions by Interlayer Exchange Coupling**

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**Temperature and magnetic field dependent behavior of atomic-scale skyrmions in Pd/Fe/Ir(111) nanoislands**

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