

Scanning Probe Methods Group, Prof. Dr. Roland Wiesendanger

**Publications: Original Articles**

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**Antiferromagnetic order of topological orbital moments in atomic-scale skyrmion lattices***F. Nickel, A. Kubetzka, M. Gutzzeit, R. Wiesendanger, K. von Bergmann, and S. Heinze*, npj Spintronics **3** 7 (2025)**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 (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)**Proximity-Induced Superconductivity in a 2D Kondo Lattice of an f-Electron-Based Surface Alloy***H. Kim, D. K. Morr, and R. Wiesendanger*, Nano Letters **24** 13875-14152 (2024)**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***L. Schneider, Ch. von Bredow, H. Kim, K. That Ton, T. Hänke, J. Wiebe, and R. Wiesendanger*, Phys. Rev. B **110** L100505 (2024)**Large diversity of magnetic phases in two-dimensional magnets with spin-orbit coupling and superconductivity***J. Neuhaus-Steinmetz, T. Matthies, E. Y. Vedmedenko, Th. Posske, and R. Wiesendanger*, Phys. Rev. B **110** 155427 (2024)**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)**Experimental Realization of Monolayer alpha-Tellurene***X. Huang, R. Xiong, C. Hao, W. Li, B. Sa, J. Wiebe, and R. Wiesendanger*, Advanced Materials **36** 2309023 (2024)**Two-dimensional lateral heterojunction arrays with tailored interface band bending***X. Huang, R. Xiong, C. Hao, P. Beck, B. Sa, J. Wiebe, and R. Wiesendanger*, Advanced Materials **36** 2308007 (2024)**Phase Coexistence of Mn Trimer Clusters and Antiferromagnetic Mn Islands on Ir(111)***A. Rodríguez-Sota, V. Saxena, J. Spethmann, R. Wiesendanger, R. Lo Conte, A. Kubetzka, and K. von Bergmann*, ACS Nano **2024** **18** (4) 3699–3706 (2024)**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)**Large interlayer Dzyaloshinskii-Moriya interactions across Ag-layers***J. A. Arregi, P. Riego, A. Berger, and E. Y. Vedmedenko*, Nature Communications **14** 6927 (2023)

**Observation and formation mechanism of 360° domain wall rings in synthetic anti-ferromagnets with interlayer chiral interactions**

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

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**Proximity superconductivity in atom-by-atom crafted quantum dots**

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**Probing the topologically trivial nature of end states in antiferromagnetic atomic chains on superconductors**

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**Systematic study of Mn atoms, artificial dimers, and chains on superconducting Ta(110)**

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**Controlled creation of quantum skyrmions**

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**Spin-orbit coupling induced splitting of Yu-Shiba-Rusinov states in antiferromagnetic dimers**

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**Plumbene on a Magnetic Substrate: A Combined Scanning Tunneling Microscopy and Density Functional Theory Study**

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**Vacuum Resonance States as Atomic-Scale Probes of Noncollinear Surface Magnetism**

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