

# Seminar über die Physik der kondensierten Materie (SFB/TRR173 Spin+X und SFB/TR288 Kolloquium, TopDyn-Seminar)

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01-122 Newton Raum

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## **Molecular Spin Qubits for Quantum Computer and High-Density Memory Devices Based on Molecular Magnets**

Spintronics, based on the freedoms of charge and spin of the electron, is a key technology in the 21st century. Magnetic random access memory (MRAM), which uses giant magnetoresistance (GMR), has several advantages compared with electronics. Although conventional magnets composed of transition metals are normally used, in our study, we use molecule-based nano-magnets and single-molecule magnets (SMMs) to overcome "Moore's Limitation". SMMs are also available for quantum computer. I will talk about the molecular spin qubits for quantum computer ([1]Crystal Engineering Method, [2]g-Tensor Engineering Method, [3]Orbital Engineering Method, and [4]Molecular Technology Method) as well as high-density memory devices such as single-molecule memory device, SMMs encapsulated into SWCNT, and metallic conducting SMMs with negative magnetoresistances.