



## Invitation to a talk

### Quantum magnetism under extreme conditions

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**Termin: Tuesday, April 30, 2024, 11:30**

**Ort: Lise-Meitner-Lecture Hall**  
9. Boltzmannngasse 5

#### **Abstract:**

Exploring quantum magnetic materials has been a major focal point in condensed matter research ever since the ideas about quantum mechanics were first voiced. It has become an essential element in developing our modern information technology. By understanding and harnessing quantum mechanical phenomena such as lasing (communication and surgery), atomic decay (clocks and computing), radiation (medical diagnostics and treatment) and magnetism (data storage, sensors and medical diagnostics) we can tailor future materials with novel functionalities. With the extreme interest for quantum computing in the scientific community and in society in general, we find ourselves on the verge of the Quantum Age. In my work, I combine neutron scattering techniques with extreme conditions of high pressure, high magnetic fields and low temperatures to explore quantum magnets and their interaction with the underlying atomic lattice. The phenomena observed in these materials are closely linked in a chicken-and-the-egg type problem. Understanding such magnetic behaviors may bring insight into the mechanisms behind for example high-temperature superconductivity and the basic concepts of quantum mechanics.

As part of the presentation, there will be a teaching demonstration on the topic  
"Perfect conductors vs. superconductors".