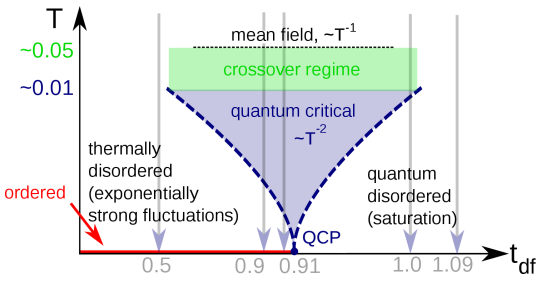
Ph.D. Solid State Theory

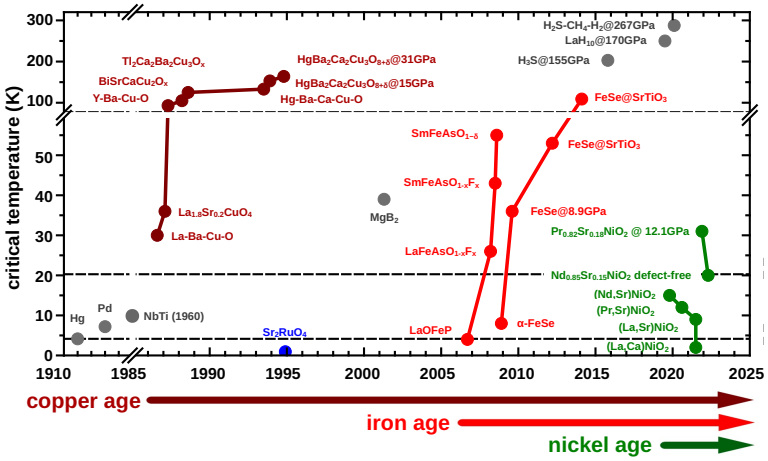
There are two vacancies for Ph.D. students (3 years) in Vienna.

The aim of the **first project**, embedded within the SFB Q-M&S, is to study **quantum critical points** and the **Zhang-Rice singlet** in the periodic Anderson and Emery model, but from a new, **quantum information perspective**. Specifically, the reduced density-matrix will be calculated using the dynamcial vertex approxiamtion (DΓA).

The **second project** is on the **novel nickelate superconductors** using density functional theory+dynamcial mean-field theory and dynamical vertex approximation. The comparison to cuprates and experiment (ARPES, neutron, optics RIXS, T_c, superconducting gap), offers a unique new opportunity to better understand high-temperature superconductivity.



Project 1: DΓA phase diagram of the quantum critical point in the periodic Anderson model. Entanglement meters such as the mutual information offer a new perspective on the quantum critical behavior.



Project 2: The age of nickelate superconductors offers a new perspective for understanding high-temperature superconductivity.

We offer a research topic at the scientific forefront in an international and vivid research environment. Vienna is a favorable location as regards culture and nature. For information on the group see www.ifp.tuwien.ac.at/cms.

Candidates should have excellent skills in theoretical physics and/or scientific programming. Please send your application and CV including a detailed list of grades to Prof. Karsten Held (held@ifp.tuwien.ac.at).