PAUL SCHERRER INSTITUT

Invitation

LMU-Seminar

Title: **Coexistence, Competition and Coupling of Magnetism and Superconductivity in Iron-Based Materials**

Speaker: **Mr. Stefan Holenstein**
Laboratory for Muon Spin Spectroscopy, PSI and University of Zurich

Time: **Monday, January 27th 2020, 10:00**

Place: **WBGB/019**

Abstract:

Superconductivity and magnetism are intuitively considered to be antagonistic. Nonetheless, there are compounds where the two orders coexist. This coexistence can occur on a microscopic scale or due to a macroscopic separation into superconducting and magnetic regions in the same sample. In some cases, the two orders do not significantly interact with each other while in other cases there is a competition or even a cooperative coupling between them. Studying the different forms of coexistence between magnetism and superconductivity might advance the understanding of the mechanisms behind superconductivity in the corresponding compounds. The iron-based superconductors are a well suited group of materials for such investigations. They exhibit comparably high superconducting transition temperatures and magnetic order can be found in most phase diagrams. In this talk, I present an overview of our μSR studies on the iron-based superconductors FeS, $FeSe_{1-x}S_x$, Sr_2VO_3FeAs, $RbEuFe_4As_4$ and ThFeAsN.