



Invitation

LMU-Seminar

Title: High pressure research using muons
Speaker: Dr. Rustem Khasanov
Laboratory for Muon Spin Spectroscopy, PSI

Time: Thursday, July 05th 2018, 14:00

Place: WBGB/019

Abstract:

Pressure, together with temperature and magnetic field, is an important thermodynamical parameter in physics. Investigating the response of a compound or material to pressure allows to elucidate ground states, investigate their interplay and interactions and determine microscopic parameters. Pressure tuning is used to establish phase diagrams, study phase transitions and identify critical points. Muon spin rotation/relaxation (μ SR) is now a standard technique making increasingly significant contribution in condensed matter physics, material science research and other fields.

In this talk, I will discuss specific requirements and challenges to perform μ SR experiments under pressure, as well as introduce the high-pressure muon facility at the Paul Scherrer Institute. Few specific examples on coexistence of magnetism and superconductivity in binary pnictides CrAs and MnP, the existence of the tricritical point in binary selenide FeSe, as well the pressure induced superconductivity in elemental Bismuth will be presented.

References:

- [1] R. Khasanov et al., Scientific Reports, 5, 13788 (2015).
- [2] R. Khasanov et al., HIGH PRESSURE RESEARCH, 36, 140 (2016).
- [3] R. Khasanov, et al., PHYSICAL REVIEW B 93, 180509(R) (2016).
- [4] Z. Shermadini, R Khasanov et al., HIGH PRESSURE RESEARCH, 37, 449 (2017).
- [5] R. Khasanov et al., JOURNAL OF PHYSICS-CONDENSED MATTER, 29, 164003 (2017).
- [6] R. Khasanov et al., PHYSICAL REVIEW B, 180504(R) (2017).
- [7] R. Khasanov et al., PHYSICAL REVIEW B, 97, 224510 (2018).
- [8] R. Khasanov et al., arXiv:1802.07139.