Contribution ID: **135** Type: **not specified**

Nodeless superconductivity and effect of hydrostatic pressure in the charge density wave superconductor SrPt2As2

Tuesday, 29 October 2019 19:10 (50 minutes)

The search of new classes of materials where superconductivity (SC) coexists with other exotic nonmagnetic phases is crucial to understand the influence of the latter on SC. Here, we present a detailed investigation of the superconducting gap symmetry on a charge-density-wave (CDW) superconductor SrPt2As2 by means of muon-spin rotation/relaxation technique (μSR) at ambient- and under hydrostatic pressure. Even in presence of a CDW phase around 470 K [1], we detect a superconducting transition at 5 K. The magnetic penetration depth, obtained from transverse-field μSR could be fitted with an isotropic s-wave model, instead of the two-gap s+s wave model reported previously [2]. The observable difference between the muon spectra collected in zero field above and below Tc, suggests the presence of a spontaneous magnetic field in the superconducting state and most likely reflects time-reversal symmetry breaking below Tc. To elucidate the correlation between CDW and SC, we performed μSR experiments under hydrostatic pressure, which provide information on the nature of the superconducting-gap symmetry. Finally, by using AC-susceptibility- and μSR measurements under pressure we could reconstruct the complete pressure-temperature phase diagram of SrPt2As2.

Position

Postdoc

Primary author: Dr GUPTA, Ritu (Laboratory for Muon Spectroscopy, Paul Scherrer Institute, CH 5232, Villigen PSI, Switzerland)

Co-authors: Ms LOHNERT, Catrin (Department Chemie, Ludwig-Maximilians, Unversitat Munchen, Butenandtstr. 5-13 (D), 81377, Munchen,Germany); JOHRENDT, Dirk (Department Chemie, LMU München, D-81377 München, Germany); Mr MALICK, Sudip (Dept. of Physics, Indian Institute of Technology Kanpur, Kanpur 2080116, India); Dr HOSSAIN, Zakir (Dept. of Physics, Indian Institute of Technology Kanpur, Kanpur 208016, India); Dr LUETKENS, Hubertus (Laboratory for Muon Spin Spectroscopy, Paul Scherrer Institute, CH-5232 Villigen PSI, Switzerland); SHIROKA, Toni (ETH Zurich); Dr WANG, Chennan (Laboratory for Muon Spectroscopy, Paul Scherrer Institute, CH 5232, Villigen PSI, Switzerland); Dr KHASANOV, Rustem (Laboratory for Muon Spin Spectroscopy, Paul Scherrer Institute, CH-5232 Villigen PSI, Switzerland)

Presenter: Dr GUPTA, Ritu (Laboratory for Muon Spectroscopy, Paul Scherrer Institute, CH 5232, Villigen PSI, Switzerland)

Session Classification: Poster session

Track Classification: Poster