

Seminar Notice

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Theoretical Physics Department

Title:	Muon spin relaxation studies of Sr_2RuO_4 under uniaxial pressure
Speaker:	Shreenanda Ghosh, Technical University Dresden, Germany
Date:	December 20, 2017 (Wednesday)
Time:	4:00 p.m.
Venue:	Theoretical Physics Seminar Room (C406), 3rd Floor, Centenary Building, IACS
Abstract:	For two decades Sr_2RuO_4 has been discussed as a spin triplet p-wave superconductor, with a chiral order parameter of the form $p_x \pm ip_y$. This order parameter has not been proved yet, however, one key piece of evidence is the observation of an enhanced zero-field muon spin relaxation (μSR) rate in the superconducting state, which implies that the order parameter breaks time-reversal symmetry (TRS). Nevertheless, the absence of any measureable spontaneous magnetization in scanning SQUID studies raises questions about this interpretation. Superconducting critical temperature of Sr_2RuO_4 has been shown experimentally to be very sensitive to uniaxial pressure, so the changes in the muon spin relaxation rate with uniaxial pressure could provide further information both on the origin of the enhanced muon relaxation rate, and the superconductivity of Sr_2RuO_4. Therefore, we have developed a uniaxial pressure cell dedicated for μSR. This cell is based on piezoelectric actuators, allowing continuous in situ tuning of the applied pressure. Results from first set of measurements will be presented, in which it was found that the low-temperature magnetic penetration depth has an unexpectedly sharp dependence on uniaxial pressure, anticipating many further applications for the newly developed apparatus.

All are cordially invited to attend the seminar