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Muon spin relaxation investigation of anomalous magnetism in pure and Fe-doped SmB6 KOLA AKINTOLA, ANAND PAL, Simon Fraser University, BC, Canada, MATT POTMA, Simon Fraser University Kwantlen Polytechnic University, BC, Canada, SHANTA SAHA, XIANGFENG WANG, Department of Physics, University of Maryland, MD, USA, JOHNPIERRE PAGLIONE, Department of Physics, University of Maryland, MD, USA; Canadian Institute for Advanced Research, JEFF SONIER, Simon Fraser University, BC, Canada; Canadian Institute for Advanced Research — The intermediate-valence compound SmB_6 is a well-known Kondo insulator, in which hybridization of itinerant conduction electrons with localized f-electrons leads to a transition from metallic to insulating behaviour at low temperatures. In recent years SmB_6 has attracted considerable attention with studies suggesting that a topological insulating state arises at low temperatures. We have carried out muon spin rotation/relaxation (μSR) measurements on both pure and 0.5% Fe-doped SmB_6 single crystals. In zero field (ZF) we observe a saturated relaxation rate at low temperatures, indicative of slow fluctuating magnetic moments. The saturated relaxation rate occurs in the same temperature region where the resistance saturates. This is surprising given that the low-temperature conduction arises from two-dimensional surface states that occur in the hybridization gap, whereas the μSR measurements exclusively probe the bulk. Previously the saturated ZF relaxation rate was attributed to in-gap magnetic states. However, measurements in a magnetic field suggest that this is a consequence of uncompensated Sm moments in a truly insulating bulk state.

Kolawole Akintola
Simon Fraser University, BC, Canada

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