Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Antiferromagnetism in Fe and Os doped URu_2Si_2 studied by μSR
M.N. WILSON, A.M. HALLAS, T. MEDINA, T.J. MUNSIE, G.M. LUKE, Department of Physics & Astronomy, McMaster University, 1280 Main St., West Hamilton, Ontario L8P 4M1, Canada, T.J. WILLIAMS, Quantum Condensed Matter Division, Neutron Sciences Directorate, Oak Ridge National Lab, Oak Ridge, TN, 37831, USA, S.C. CHEUNG, B.A. FRANDSEN, L. LIU, Y.J. UEMURA, Department of Physics, Columbia University, New York, New York 10027, USA — URu_2Si_2 is a material that has been studied extensively for almost three decades in an effort to characterize its unusual "hidden order" state. One common method used to study this compound is to perturb the ground state by doping the Ru site with various metals. Such doping usually causes the transition temperature to drop, and the hidden order state to transition into an antiferromagnetic state. In contrast to this common behavior, the isoelectronic dopings Fe and Os cause a substantial increase in the transition temperature over a wide range of dopings. However, the magnetic states of these dopings have not been well characterized, with only a small number of studies on polycrystalline samples reported in the literature. In this talk, we present an investigation of the magnetic properties of single crystal samples of $URu_{2-x}Fe_xSi_2$ and $URu_{2-x}Os_xSi_2$. Our μSR results demonstrate that both of these dopings show an antiferromagnetic ground state between $x = 0.1$ and $x = 0.4$ that evolves with increasing temperature into the paramagnetic state by a second order transition.

Murray Wilson
Department of Physics & Astronomy, McMaster University,
1280 Main St., West Hamilton, Ontario L8P 4M1, Canada

Date submitted: 14 Nov 2014 Electronic form version 1.4