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Antiferromagnetism and Hidden Order in Isoelectronic Doping of URu_2Si_2 MURRAY WILSON, McMaster University, TRAVIS WILLIAMS, Oak Ridge National Laboratory, YIPENG CAI, ALANNAH HALLAS, TERESA MEDINA, TIMOTHY MUNSIE, McMaster University, SKY CHEUNG, LIAN LIU, BENJAMEN FRANDSEN, YASUTOMO UEMURA, Columbia University, GRAEME LUKE, McMaster University — URu_2Si_2 has been studied for three decades to understand its unusual hidden order state. Doping of this compound on the Ru site usually causes the transition temperature to decrease and hidden order to transition to magnetic order. In contrast, the isoelectronic dopings Fe and Os cause a substantial increase in the transition temperature over a wide range of dopings, with Fe in particular mimicking applied hydrostatic pressure. However, until recently, the magnetic states of these dopings have not been well characterized. In the past year, neutron scattering results have been reported on Fe doping that show antiferromagnetism with moments that are twice as large as those measured for pure URu_2Si_2 under pressure. In this talk we present an investigation of the magnetic properties of single crystal samples of $URu_{2-x}Fe_xSi_2$ and $URu_{2-x}Os_xSi_2$ by muon spin rotation (μSR) and susceptibility. Our μSR results demonstrate that both of these dopings show an antiferromagnetic ground state with internal fields comparable to pure URu_2Si_2 under pressure. Interpretation of our data indicates that the evolution of magnetism with doping for both Fe and Os is driven by changes in hybridization.

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