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Knight Shift Probe of Onset of Coherence in Heavy Electron Superconductor CeIrIn5 ABIGAIL SHOCKLEY, NICHOLAS CURRO, University of California-Davis, ADAM DIOGUARDI, NICHOLAS APROBERTS-WARREN, PETER KLAVINS, UC-Davis — The $CeMIn_5$ compounds, where M = Co, Ir, Rh, are a novel class of superconductors discovered about 10 years ago. The 115 compounds are Kondo lattice materials: the compound's conduction electrons are coupled to an ordered lattice of local moments through the Kondo effect. These materials have a large effective electronic mass at low temperatures. We present new NMR Knight shift data in single crystals of CeIrIn5 between 2K and 120K. We find that the Knight shift of the In(1) site in this material is proportional to the bulk magnetic susceptibility above a temperature T* $\sim$ 30(?)K. Below this temperature, the Knight shift fails to track the susceptibility. We interpret these results in terms of the two-fluid model, in which the susceptibility of the heavy electron component, chi_cf, grows in intensity with decreasing temperature. We find that K_cf $\sim$ chi_cf $\sim$ log(T/T*), in agreement with other heavy fermion compounds. Our results confirm the predictions of the dynamical mean field theory calculations of Haule et al. for the onset of coherence in this compound.

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