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Kerr effect studies of the Heavy Fermion URu₂Si₂ HOVNATAN KARAPETYAN, ELIZABETH SCHEMM, JING XIA, Stanford University, KAMRAN BEHNIA, Ecole Supérieure de Physique et de Chimie Industrielles, Paris, AHARON KAPITULNIK, Stanford University — In the heavy fermion metal URu₂Si₂ the very large entropy carried by the 5f electrons is released at ~ 17.5 K via a second-order phase transition to a “hidden order” state. Below ~ 1.5 K superconductivity emerges with a yet unknown gap structure adding to the mystery associated with this material. In this talk we present polar Kerr effect measurements of URu₂Si₂ crystals using a Sagnac interferometer. We find a weak magnetic signal in the “hidden order” phase that seems to not influence superconductivity. Finite Kerr signal below T_c provides strong evidence that time reversal symmetry is broken in the superconducting state. The relation between the magnetic response in the “hidden order” phase and superconductivity is also studied.

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