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Optical Kerr Measurements of $PrOs_4Sb_{12}$ E. M. LEVENSON-FALK, Stanford University, M. BRIAN MAPLE, UC San Diego, YUJI AOKI, Tokyo Metropolitan University, AHARON KAPITULNIK, Stanford University — By probing the symmetries of a superconducting order parameter, it is possible to gain insight into the microscopic physics underlying superconductivity. This approach is especially important for unconventional superconductors, such as heavy fermion materials, where the pairing mechanisms are poorly understood. Time reversal symmetry breaking plays a large role in many heavy fermion systems, due to their strong magnetic interactions; however, TRS is an especially difficult symmetry to probe. Using a zero-loop-area Sagnac interferometer, we measure the polar Kerr effect in materials and thus extract information about TRSB via the optical conductivity. We present measurements of the polar Kerr effect in the multi-phase heavy fermion material PrOs4Sb12, and discuss applications to other materials.

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