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**Time Reversal Symmetry Breaking in Polar Kerr Measurements of the Heavy-Fermion Superconductor $CeCoIn_5$** ELI LEVENSON-FALK, JOSHUA STRAQUADINE, ELIZABETH SCHEMM, AHARON KAPITULNIK, Stanford University, PRISCILLA ROSA, ZACHARY FISK, Department of Physics, UC Irvine — The heavy-fermion superconductor $CeCoIn_5$ is of great interest, as it shares many features with high-$T_C$ d-wave superconductors, with unconventional pairing and competition between superconducting and magnetic phases. Understanding the mechanisms of superconductivity in this material can elucidate the physics of high-$T_C$ and of unconventional superconductivity in general. We present measurements of the polar Kerr effect in $CeCoIn_5$ using a zero-area Sagnac interferometer. We observe an onset of Kerr rotation near the superconducting transition temperature, indicating an order parameter which breaks time reversal symmetry. We discuss the relation of this symmetry breaking to the superconducting state, and place our measurement in context with other experiments on this material.

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