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Switching of the Spin-Density-Wave in $CeCoIn_5$ probed by Thermal Conductivity[1] DUK Y. KIM, SHI-ZENG LIN, FRANZISKA WEICKERT, ERIC D. BAUER, FILIP RONNING, JOE D. THOMPSON, ROMAN MOVSHOVICH, Los Alamos National Laboratory — Unconventional superconductor $CeCoIn_5$ orders magnetically in a spin-density-wave (SDW) in the low-temperature and high-field corner of the superconducting phase. Recent neutron scattering experiment revealed that the single-domain SDW's ordering vector Q depends strongly on the direction of the magnetic field, switching sharply as the field is rotated through the anti-nodal direction. This switching may be manifestation of a pair-density-wave (PDW) p-wave order parameter, which develops in addition to the well-established d-wave order parameter due to the SDW formation. We have investigated the hypersensitivity of the magnetic domain with a thermal conductivity measurement. The heat current (J) was applied along the [110] direction such that the Q vector is either perpendicular or parallel to J, depending on the magnetic field direction. A discontinuous change of the thermal conductivity was observed when the magnetic field is rotated around the [100] direction within $0.2\,^\circ$. The thermal conductivity with the Q parallel to the heat current ($J \| Q$) is approximately 15% lager than that with the Q perpendicular to the heat current ($J \perp Q$). This result is consistent with additional gapping of the nodal quasiparticle by the p-wave PDW coupled to SDW.

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