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Angle Resolved Thermal Conductivity of Superconducting $CeCoIn_5$ along the Nodal Direction[1] ROMAN MOVSHOVICH, DUK Y. KIM, SHIZENG LIN, FRANZISKA WEICKERT, ERIC D. BAUER, FILIP RONNING, JOE D. THOMPSON, Los Alamos National Laboratory — The thermal conductivity measurement in a rotating magnetic field is a powerful probe of the structure of the superconducting energy gap. The four-fold oscillation in thermal conductivity of $CeCoIn_5$, with the heat current in the anti-nodal direction, has revealed the d-wave nature of its order parameter. We have measured the thermal conductivity with the heat current along the [110] (nodal) direction and the magnetic field rotating in the *ab*-plane. In contrast to the smooth oscillation found with the heat current along the anti-nodal direction, a sharp increase of thermal conductivity was observed when the magnetic field is also in the [110] direction, parallel to the heat current. This suggests that the scattering of the nodal quasiparticle is strongly suppressed along the magnetic field direction. In addition, a smaller increase of the thermal conductivity was observed when the magnetic field is approximately 30 degree away from the nodal direction, perhaps due to a Fermi surface anomaly.

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