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Gap structure probed by field-angle resolved thermal oscillations in CeCoIn5 superconductor[1] MATTHIAS J. GRAF, TANMOY DAS, Los Alamos National Laboratory, ANTON B. VORONTSOV, Montana State Univ., ILYA VEKHTER, Louisiana State Univ. — We calculate the angle-resolved oscillations of the specific heat and thermal conductivity in a rotating in-plane magnetic field in the multiband superconductor $CeCoIn_5$ using realistic tight-binding Fermi surfaces. We find that an electron pocket at the M point and a hole pocket at the Γ point of the Brillouin zone yield sufficiently large Fermi surface anisotropies to produce fourfold oscillations not only for d-wave pairing, but also for s-wave pairing in the regime where our approximations are valid for both nodal and isotropic gap, namely near the upper critical field H_{c2} and down to fields of order $H_{c2}/2$. More importantly, in this region we find a sign reversal in the oscillations as a function of temperature and fixed field for all gap symmetries investigated. We compare our results with available data on $CeCoIn_5$ and $CeIrIn_5$ and discuss how Fermi surface anisotropies affect the identification of gap structures and symmetries.

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