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Phase diagram of the non-centrosymmetric Kondo lattice model LEONID ISAEV, Louisiana State University, DANIEL AGTERBERG, University of Wisconsin-Milwaukee, ILYA VEKHTER, Louisiana State University — Kondo lattice model is prototypical for studying materials with localized f-electrons such as heavy-fermion compounds that exhibit a competition between Kondo screening and magnetism. This competition was argued to be crucial for superconductivity in these systems. We study the effects of spin-orbit interaction (SOI) in the conduction band (due to the lack of inversion symmetry), on the interplay between Kondo, superconducting and magnetic phases by considering the $S = 1/2$ 2D Kondo lattice with short-range Heisenberg coupling between localized moments and utilizing a pseudo-fermion hybridization mean-field theory. In particular, we demonstrate that the heavy-fermion state, and hence superconductivity, is suppressed with increasing SOI. Our results are of relevance for Ce- and U-based heavy-fermion superconductors without inversion symmetry.

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