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**Anomalies in the FFLO transition of ultra-thin superconducting films with Rashba Spin-orbit interaction** GERTRUD ZWICKNAGL, SIMON JAHNS, Institut f. Mathematical Physics, TU Braunschweig, Germany, PETER FULDE, Max-Planck-Institut f. Physik komplexer Systeme, Dresden, Germany — We calculate the in-plane upper critical fields of ultra-thin superconducting films with Rashba spin-orbit (SO) interaction. Thereby we cover the range from small to large SO interactions compared with the superconducting gap parameter of the bulk reference system. The competition between intra- and inter-band pairing is reflected in the variation with temperature of the magnetic field of the second order transition to the normal state. We find a regime of SO coupling parameters where the corresponding center-of-mass momentum of the Cooper pairs varies non-monotonically with temperature.

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