

Magnetic Lifshitz transition in iron-based superconductors

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In this lecture we address Lifshitz transition (LT) induced by applied external magnetic field in a case of iron-based superconductors (IBSC), in which a difference between the Fermi level and the edges of the bands is relatively small. We introduce and investigate a two-band model with intra-band pairing in the relevant parameters regime to address a generic behavior of a system with hole-like and electron-like bands in external magnetic field. Our results show that two LT can develop in analyzed systems and the first one occurs in the superconducting phase and takes place at approximately constant magnetic field [1]. The chosen sets of the model parameters can describe characteristic band structure of IBSC and thus the obtained results can explain the experimental observations in e.g. FeSe.

References:

[1] A. Ptok, K. J. Kapcia, A. Cichy, A. M. Oleś, and P. Piekarz, *Sci. Rep.* **7**, 41979 (2017).

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