

Unusual angle-dependent magnetoresistance of EuCd_2As_2

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In pursuit of non-trivial topological properties of Europium bearing Zintl phases the physical properties of EuCd_2As_2 have been intensively explored. There are numerous reports on its magnetization and magnetotransport, but the angular dependence of its magnetoresistance was not studied yet.

Several papers reported EuCd_2As_2 as a semimetal with single pair of Weyl nodes induced by spin fluctuations [1] and/or magnetic exchange interaction [2]. On the other hand, a very recent preprint argues that the compound is a magnetic semiconductor with a gap of 0.77 eV [3]. That came as no surprise, regarding extreme tunability of the electronic structure of this compound by pressure and chemical substitution [4,5]. In this work we revisit the magnetic properties and present novel angular dependence of the magnetoresistance, measured on good quality single crystals. Behavior of the anisotropic magnetoresistance is unconventional, and indicates topologically non-trivial state, most likely of Weyl nodes character.

References:

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