

Intriguing magnetotransport properties of Ca-based ternary pnictide compounds

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In recent years, the pnictide based intermetallic compounds have shown many interesting properties like spin density wave, superconductivity, nodal line semimetal etc., [1-3]. That too the Ca-based pnictide compounds were in the limelight. For example, CaFe_2As_2 exhibits interesting structural phase transitions like tetragonal, orthorhombic and collapsed tetragonal structures. Similarly, both electron and hole doping in CaFe_2As_2 have shown superconductivity at low temperature. CaAgX ($X = \text{As, P}$) are low carrier nodal-line Dirac semimetals [3]. In view of these intriguing properties of Ca-based pnictide compounds, we have investigated the physical properties of CaCuSb and CaCu_4As_2 [4, 5]. The CaCuSb crystallizes in the hexagonal crystal structure with Cu-Sb layers sandwiched between the Ca-layers. While CaCu_4As_2 crystallizes in the rhombohedral crystal structure with a long c-axis with multiple Cu-As layers. The magnetotransport properties of both these compounds exhibits interesting properties such as weak antilocalization and quantum Hall effect. We have also observed Shubnikov-de Haas quantum oscillations in both these compounds and studied the Fermi surface properties. The results of these two Ca-based intermetallic compounds will be presented.

References:

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