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# Superconductivity and Magnetism of Dirac-Semimetal CaSb2 and EuSb2

CaSb2 has been identified as a topological semimetal [1] and a bulk superconductor[2,3]. We investigate the superconducting state and the spontaneous magnetism using muon spin-relaxation (μSR) [4]. Zero-field muon relaxation shows little temperature dependence when the muon-spin is parallel to the c*-axis, while an increase in relaxation appears below 1 K when the muon-spin is parallel to the ab-plane [4]. This suggests an emergence of a second superconducting phase with a loop-current on the ab-plane below the bulk Tc = 1.55 K.
EuSb2 is also a topological semimetal [5], but with a magnetic order of Eu2+ (S=7/2) at the Neel temperature TN=26.5K [6]. The Weiss temperature θ = -0.32 K is anomalously small, suggesting a competition between the ferromagnetic and the antiferromagnetic interactions within and between the zig-zag chains. Zero-field μSR observed two precession frequencies with the identical amplitudes, but with one of them showing an anomalous temperature dependence [7]. We discuss the origin of the anomaly in relation to the tricritical point of ferro- and antiferro-magnetic interactions.

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