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Title:	Strong spin depolarization in the ferromagnetic Weyl semimetal Co3Sn2 S2: Role of spin-orbit coupling
Authors:	Howlader, S. (/jspui/browse?type=author&value=Howlader%2C+S.) Kumar, Ritesh (/jspui/browse?type=author&value=Kumar%2C+Ritesh) Sheet, G. (/jspui/browse?type=author&value=Sheet%2C+G.)
Keywords:	Co3Sn2S2 Weyl semimetal ferromagnetic
Issue Date:	2020
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Citation:	Physical Review B, 102(10)
Abstract:	Co3Sn2S2 has recently emerged as a ferromagnetic Weyl semimetal. Theoretical investigation of the spin-split bands predicted half metallicity in the compound. Here, we report the detection of a spin-polarized supercurrent through a Nb/Co3Sn2S2 point contact where Andreev reflection is seen to be large, indicating a large deviation from half metallicity. In fact, analysis of the Andreev reflection spectra reveals very small spin polarization at different points with the degree of spin polarization ranging from 20% to 50% at the Fermi level of Co3Sn2S2. Our theoretical calculations of electronic density of states reveal a spin-depolarizing effect near the Fermi energy when the role of spin-orbit coupling is included. The inclusion of spin-orbit coupling also reveals particle-hole asymmetry that explains a large asymmetry observed in our experimental Andreev reflection spectra.
Description:	Only IISERM authors are available in the record.
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