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Title:	2D weak anti-localization in thin films of the topological semimetal $\text{Pd}_3\text{Bi}_2\text{S}_2$.
Authors:	Sheet, Goutam (/jspui/browse?type=author&value=Sheet%2C+Goutam) Singh, Yogesh (/jspui/browse?type=author&value=Singh%2C+Yogesh)
Keywords:	Topological insulators Topological matter
Issue Date:	2021
Publisher:	Springer Nature
Citation:	Scientific Reports, 11(1).
Abstract:	<p>$\text{Pd}_3\text{Bi}_2\text{S}_2$ (PBS) is a recently proposed topological semimetal candidate. However, evidence for topological surface states have not yet been revealed in transport measurements due to the large mobility of bulk carriers. We report the growth and magneto-transport studies of PBS thin films where the mobility of the bulk carriers is reduced by two orders of magnitude, revealing for the first time, contributions from the 2-dimensional (2D) topological surface states in the observation of the 2D weak anti-localization (WAL) effect in magnetic field and angle dependent conductivity measurements. The magnetotransport data is analysed within the 2D Hikami-Larkin-Nagaoka (HLN) theory. The analysis suggests that multiple conduction channels contribute to the transport. It is also found that the temperature dependence of the dephasing length can't be explained only by electron-electron scattering and that electron-phonon scattering also contributes to the phase relaxation mechanism in PBS films.</p>
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