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JOHANNES GUTENBERG UNIVERSITÄT MAINZ

Theory of Condensed Matter: Hard Condensed Matter

Nov. 7, 2017 at 2 p.m.
Galileo room, 01-128 (Staudinger Weg 9)

Oliver Breunig
University of Cologne

Gigantic negative magnetoresistance in a disordered Topological Insulator

Recently the phenomenon of negative magnetoresistance (MR) is attracting renewed interest due to its occurrence in Weyl semimetals because of the chiral anomaly. In other systems a large MR typically relates to magnetism. In this talk a novel mechanism leading to a large negative MR will be presented that is based not on magnetism, but on disorder. In the newly synthesized bulk- insulating topological insulator material T1BixSb1-xTe2 we find a suppression of the resistivity by up to 98 % in 14 T at low temperature. From transport data and numerical simulations, this gigantic negative MR is understood by a percolation of charge puddles formed in the disordered bulk.

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