

Abstract Submitted
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Tendency to Localization in Interacting Weyl Semimetals¹

HAIZHOU LU, SHUNQING SHEN, The Univ of Hong Kong — Weyl semimetals are novel topological states of quantum matter, in which electrons or Weyl fermions are robust against impurity or disorder, and tend to be delocalized. In a weak external magnetic field, a negative magnetoconductivity is found to be proportional to the square root of magnetic field at low temperatures, giving the signature of the delocalization. However, here we demonstrate that the metallic and delocalization behavior of Weyl semimetals can be sabotaged by electron-electron interaction and inter-valley effects. An “insulating” tendency is therefore illustrated in disordered and interacting Weyl semimetals. Reference: Hai-Zhou Lu and Shun-Qing Shen, arXiv:1411.2686

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