

Abstract Submitted
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Collective modes in Weyl semimetals DMYTRO PESIN, Univ of Utah, IVAN PANFILOV, ANTON BURKOV, University of Waterloo — Weyl semimetals are three-dimensional crystalline systems where pairs of bands touch at points in momentum space, termed Weyl nodes, that are characterized by a definite topological charge: the chirality. Consequently, they exhibit the Adler-Bell-Jackiw (chiral) anomaly. We consider new plasmon modes that appear in Weyl semimetals in a magnetic field due to the existence of the chiral anomaly in such systems. We show that due to the \sqrt{B} dependence of their frequency on the magnetic field magnitude at low levels of doping, these modes couple effectively to the acoustic vibrations, leading to the existence of new hybrid plasmon-phonon modes. We discuss the implications of the existence of such modes for the sound absorption in Weyl semimetals.

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