



Contribution ID: 165

Type: **Talk**

Entropy wave instability in Dirac and Weyl semimetals

Tuesday 31 August 2021 18:30 (30 minutes)

Hydrodynamic instabilities driven by a direct current are analyzed in two-dimensional (2D) and three-dimensional (3D) relativistic-like systems with the Dyakonov-Shur boundary conditions supplemented by a boundary condition for temperature. Besides the conventional Dyakonov-Shur instability for plasmons, we find a novel entropy wave instability in both 2D and 3D systems. The entropy wave instability is a manifestation of the relativistic-like nature of electron quasiparticles and a nontrivial role of the energy current in such systems. It is noticeable that these two instabilities could occur for the opposite directions of fluid flow. While the Dyakonov-Shur instability is characterized by the plasma frequency in 3D and the system size in 2D, the frequency of the entropy wave instability is tunable via the system size and the flow velocity.

Is this abstract from experiment?

No

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

Yes

Details

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Internet talk

Yes

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