



ID de Contribution: 188

Type: Talk

Vortices in ultracold Fermi gases: peculiarity of their structure and impact on dynamics

mardi 21 mars 2023 14:30 (30 minutes)

It will be shown that spin polarized vortices in Fermi superfluid acquire a peculiar structure with a reversed circulation inside the core. Their structure admits the vanishing minigap with a characteristic pattern of single-quasiparticle level crossings at the Fermi surface. It is also predicted that the dynamics along the vortex line of spatially localized polarization inside the core will be suppressed. The impact of the vortex core structure on dynamics will be analyzed in the context of recent experiment involving colliding vortex dipoles [Nature (London) 600, 64 (2021)] which revealed nonuniversal dissipative dynamics. Moreover consequences for neutron star crust and the decay of turbulent state will be discussed.

References

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Classification de Session: Tuesday 14:00-15:30

Classification de thématique: Pairing and Superfluidity