

Abstract

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Anomaly non-renormalization in interacting Weyl semimetals

Joint with A. Giuliani and V. Mastropietro

Weyl semimetals are a recently discovered class of materials, whose band structure at the Fermi level mimics massless relativistic fermions in 3+1 dimensions. As predicted by Nielsen and Ninomiya three decades before their discovery, when exposed to external electromagnetic fields these materials display the analogue of the chiral anomaly of QED, arising as a net quasi-particle flow between different Fermi points. In this talk I will discuss a rigorous generalization of Nielsen-Ninomiya's prediction to the case of interacting lattice Weyl semimetals. Our result extends the Adler-Bardeen anomaly non-renormalization property of QED to an interacting condensed matter system.