Physics Seminar

“Chiral anomaly in disordered Weyl semimetals”

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We consider the effect of disorder on the chiral anomaly in Weyl semimetals. Chiral anomaly is robust under small perturbations and thus will not be affected by a small to moderate disorder strength. Here, we explicitly show that the chiral magnetic effect survives when the system undergoes a transition to a diffusive metal and the chiral states scatter with the normal states, as long as the disorder does not couple the pair of Weyl nodes. Moreover, we consider the non-perturbative “rare-region" effects on the Weyl semimetals and how it can affect the chiral anomaly.

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