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Anatomy of Chiral Magnetic Effect In and Out of Equilibrium

Wednesday 9 August 2017 14:30 (30 minutes)

We identify a new contribution to the chiral magnetic conductivity at finite frequencies-the magnetization current. This allows us to quantitatively reproduce the known field-theoretic time-dependent (AC) chiral magnetic response in terms of kinetic theory. We evaluate the corresponding AC chiral magnetic conductivity in two-flavor QCD plasma at weak coupling. The magnetization current results from the spin response of chiral quasiparticles to magnetic field, and is thus proportional to the quasiparticle's g-factor. In condensed matter systems, where the chiral quasiparticles are emergent and the g-factor can significantly differ from 2, this opens up the possibility of tuning the AC chiral magnetic response.

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