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## Sphaleron damping and effects on normal and anomalous charge transport in high-temperature QCD plasmas

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We modify the hydrodynamic equations of a relativistic chiral plasma to account for dissipative effects due to QCD sphaleron transitions. By analyzing the linearized hydrodynamic equations, we show that sphaleron transitions lead to nontrivial effects on vector and axial charge transport phenomena in the presence of a magnetic field. Notably, dissipative effects of sphaleron transitions lead to the emergence of a wavenumber threshold that characterizes the onset of Chiral Magnetic Waves. Sphaleron damping also significantly impacts the time evolution of both vector and axial charge perturbations in the presence of a magnetic field. We further investigate the dependence of charge separation on the rate of sphaleron transitions, which may have implications for the experimental search for the Chiral Magnetic Effect in heavy ion collisions.

### Category

Theory

### Collaboration (if applicable)

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