

Chiral Shock Waves

We study the shock waves in relativistic chiral matter. We argue that the conventional Rankine-Hugoniot relations are modified due to the presence of chiral transport phenomena. We show that the entropy discontinuity in a weak shock wave is quadratic in the pressure discontinuity when the effect of chiral transport becomes sufficiently large. We also show that rarefaction shock waves, which do not exist in usual non-chiral fluids, can appear in chiral matter. The direction of shock wave propagation in a vorticity is found to be completely determined by the direction of the vorticity and the chirality of fermions.

Preferred Track

New Theoretical Developments

Collaboration

Not applicable

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