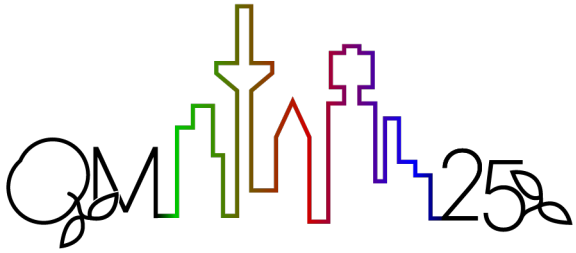

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Structure and Evolution of Shock Waves in the Presence of the Magnetic Fields for Heavy-Ion Collisions and Astrophysics Applications

Shock waves in matter produced under extreme conditions drive complex processes like energy transfer, particle acceleration, and plasma instability. Magnetic fields alter the shock wave properties of matter produced in heavy ion collisions and astrophysics, influencing energy density, pressure, and turbulence in these extreme conditions. How magnetic fields impact shock wave evolution in both quark-gluon plasma from heavy ion collisions and in astrophysical processes like neutron star mergers and core-collapse supernovae can be examined through simulations. This study explores how magnetic fields shape shock wave behaviour in relativistic magnetohydrodynamics (RMHD), with applications in heavy ion collisions and astrophysics. The findings of this work offer insights into the fundamental interactions of shock waves in magnetised, relativistic fluid for Heavy-Ion Collisions and Astrophysics applications.

Category

Theory

Collaboration (if applicable)

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