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Effect of dynamical screening on quantized electrical conductivity in binary neutron star merger

We examine nature of longitudinal electrical conductivity in magnetized plasma considering dynamical screening in the context of binary neutron star merger (BNS). We consider strongly quantizing domain for significant thermodynamic contribution in the calculation of transport coefficient. We solve Boltzmann equation in presence of magnetic field to obtain dissipative component of the conductivity tensor. Electrical conductivity is formulated considering dynamically screened medium with magnetically modified screening. Numerical estimations show that the effect of screening on electrical conductivity is less whereas inclusion of dynamical screening results significant modification. Dynamical screening reduces electrical conductivity leading to a reduction in relevant magnetic field decay time scale. We find that the reduced decay time scale becomes same order of the survival timescale of the post merged object. The estimation for decay timescales due to longitudinal conductivity provides the relevance of inclusion of resistive magneto-hydrodynamics for BNS merger simulation.

Is this abstract from experiment?

No

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

Yes

Details

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Internet talk

Yes

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