

A stable and causal model of magnetohydrodynamics

Wednesday, 10 August 2022 14:45 (45 minutes)

Magnetohydrodynamics (MHD) is a theory with a broad range of applications, from plasma physics to heavy-ion collisions and astrophysics. In this talk, I will show how methodologies in formal hydrodynamics allows to reformulate MHD in terms of symmetry considerations. In particular, I will show that MHD can be viewed as a theory of superfluidity and highlight its usefulness as a simpler way of keeping track of dissipative effects and equilibrium configurations. Based on this formulation, I will discuss a promising model of MHD and show that for a given toy model of a relativistic plasma it cures linear stability and causality issues typically inherent to relativistic hydrodynamics.

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