Type: Talk

## Divergence-type hyperbolic theories for ultrarelativistic fluids

Tuesday 7 May 2019 09:20 (20 minutes)

In this talk I will present a novel theory with the aim of describing the dynamics of ultrarelativistic fluids considering dissipative effects up to second order. The problem of achieving a covariant relativistic extension of the equations that describe non-relativistic dissipative fluids constitutes a very active area of current research, given that a well-posed and causal theory of viscous fluids is essential for a better description of several astrophysical problems, as for example the coalescence of compact objects, which constitute nowadays the main source of gravitational wave production. After mentioning previous attempts for covariant extensions of viscous fluids, we will present a proposal for the study of the dynamic evolution of ultrarelative fluids. Then, we will show how to implement the equations of the theory numerically, using the Kurganov-Tadmor centered method, which allows capturing discontinuous solutions that simulate shock waves, and show some simulations in the one-dimensional case.

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