MAGIC

Science of the Cosmos

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Hydrodynamic Shock Waves and Junction Conditions in Gravity Theories.

In this talk, we will explore the intrinsic relationship between hydrodynamic shock waves and junction conditions in gravity theories such as general relativity, f(R) theories, and scalar-tensor theories. Hydrodynamic shock waves are abrupt discontinuities in the physical properties of a relativistic fluid propagating through curved space-time. These discontinuities require careful treatment to ensure the physical and mathematical consistency of the model. Junction conditions provide the necessary framework to describe how different regions of space-time are connected in the presence of such discontinuities. We will discuss how the relativistic jump conditions relate to the junction conditions and how this relationship is essential for understanding astrophysical and cosmological phenomena in the context of extended gravity theories.

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