



Dipartimento di Fisica
Università di Cagliari
INFN, Sezione di Cagliari



HIGH ENERGY PHYSICS COLLOQUIA

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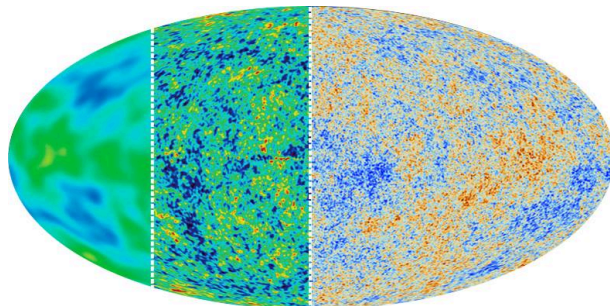
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CONSTRAINTS ON THE COUPLING BETWEEN DARK ENERGY AND DARK MATTER FROM CMB DATA

Abstract

Cosmic Microwave Background (CMB) temperature anisotropy is one of the most important observational probes of modern cosmology. Its investigation is a powerful tool to test the Λ CDM model and understand the nature of dark matter and dark energy. Whereas interactions between dark energy and ordinary matter are heavily constrained by observations, we cannot exclude a coupling between dark energy and dark matter, given that we do not know the true nature of either of them. In this seminar I will discuss the intriguing case of a phenomenological non-gravitational coupling between dark energy and dark matter, where the interaction in the dark sector is parameterized as an energy transfer either from dark matter to dark energy or the opposite. Both models are found to be compatible with a whole host of updated cosmological data. Furthermore, in the case where dark energy decays into dark matter, the predicted values of the Hubble parameter and the variance of the matter distribution nicely agree with their local determinations, with a full reconciliation of the tension between high- and low-redshift observations present for standard Λ CDM cosmology.



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