

Constraining modified gravity using all astrophysical and cosmological scales: A new paradigm.

Precision tests of General Relativity (GR) are a cornerstone of modern physics, however they are typically discipline and context specific. Based on the successful Parameterised Post Newtonian (PPN) approach, I will present a holistic framework for constraining theory agnostic modifications to GR that allows astrophysical and Solar system tests to be combined with cosmological tests using a single unified set of parameters. Using this framework I will show constraints on deviations from General Relativity with a combination of Cosmological (Cosmic Microwave Background and Baryon Acoustic oscillation) and Solar System (Cassini probe and Mars Ephemeris) data. These results demonstrate the ability of this framework to combine astrophysical, Solar System and cosmological tests of gravity into a single unified approach to precision tests of gravity.

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