

Testing extended Jordan-Brans-Dicke theories with future cosmological observations

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© 2019 IOP Publishing Ltd and Sissa Medialab. The extended Jordan-Brans-Dicke (eJBD) theory of gravity is constrained by a host of astrophysical and cosmological observations spanning a wide range of scales. The current cosmological constraints on the first post-Newtonian parameter in these simplest eJBD models in which the recent acceleration of the Universe is connected with the variation of the effective gravitational strength are consistent, but approximately two orders of magnitude larger than the time-delay test within the Solar System. We forecast the capabilities of future galaxy surveys in combination with current and future CMB anisotropies measurements to further constrain the simplest dark energy models within eJBD theory of gravity. By considering two cases of a monomial potential (a quartic potential or a cosmological constant), we show how Euclid-like galaxy clustering and weak lensing data in combination with BOSS and future CMB observations have the potential to reach co