



Towards a fully consistent parameterization of modified gravity

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There is a distinct possibility that current and future cosmological data can be used to constrain Einstein's theory of gravity on the very largest scales. To be able to do this in a model-independent way, it makes sense to work with a general parameterization of modified gravity. Such an approach would be analogous to the Parameterized Post-Newtonian (PPN) approach which is used on the scale of the Solar System. A few such parameterizations have been proposed and preliminary constraints have been obtained. We show that the majority of such parameterizations are only exactly applicable in the quasistatic regime. On larger scales they fail to encapsulate the full behaviour of typical models currently under consideration. We suggest that it may be possible to capture the additions to the 'Parameterized Post-Friedmann' (PPF) formalism by treating them akin to fluid perturbations.

Comments: 24 pages. Minor changes to match the published version - references added, comments added to sections 1 and 5

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