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f(R) for surveys

The different observations coming from the late time Universe point to an accelerated expansion rate, dubbed to be originated from a Dark Energy component but its physical origin still remains unknown. Many theoretical models coming from scalar field theories for instance have been proposed. The contents of this talk were presented in <https://doi.org/10.1103/PhysRevD.98.083530>. In this work we present the a new parametrization for the equation of state (EoS) $w_x = p_x / \rho_x$, which can reproduce a $f(R)$ -like evolution with a precision between [0.5%–0.8%] over the numerical solutions. This proposal can render a variety of popular $f(R)$ models that are considered viable candidates for the cosmic late time acceleration. By using observational data from baryonic acoustic oscillations, supernovae and cosmic chronometers we investigate the constraints on the new EoS parameters. Our proposal sets an EoS formulation which can be used in an efficient way and makes a good candidate to be implemented in a variety of surveys in order to test the generic behavior.

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