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# Cosmology of Chameleons with Power-Law Couplings

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In chameleon field theories a scalar field can couple to matter with gravitational strength and still evade local gravity constraints due to a combination of self-interactions and the couplings to matter. Originally, these theories were proposed with a constant coupling to matter, however, the chameleon mechanism also extends to the case where the coupling becomes field-dependent. We study the cosmology of chameleon models with power-law couplings and power-law potentials. It is found that these generalized chameleons, when viable, have a background expansion very close to LCDM, but can in some special cases enhance the growth of the linear perturbations at low redshifts. For the models we consider it is found that this region of the parameter space is ruled out by local gravity constraints. Imposing a coupling to dark matter only, the local constraints are avoided, and it is possible to have observable signatures on the linear matter perturbations.

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