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(G*) Cosmology of scalar fields coupled to dark matter and to all matter

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Alternative gravity theories have been extensively explored beyond general relativity to study the modified growth of the cosmological perturbations, in which the scalar-tensor theory, with a single scalar field coupled to all of the matter is the most conventional one. MGCAMB, as the public code used to study modifications to the growth structure, has been used to study cosmological predictions of different types of such modified gravity theories. In this work, we extend MGCAMB to include models with a scalar field coupled only to dark matter. We then identify the characteristic observational signatures that could distinguish between the all-matter and the dark matter-only coupled scalar fields.

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