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Coupled Proca vector dark energy

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We investigate the cosmic effects of a Proca-type vector field coupled to cold dark matter (CDM). We compute the cosmological perturbations and the background evolution of the model by implementing it in the Boltzmann code CLASS. The interaction term was chosen as a $Qf(X)\rho_{cdm}$, where Q is a coupling constant, $f(X)$ is a polynomial function of the vector field A_μ, and ρ_{cdm} is the CDM energy density. Our code reproduced the previous result at background level showed in \textit{JCAP 12 (2019) 032} and the solution of matter power spectrum (P_k) and angular power spectrum (C_{ll}) described in \textit{JCAP 03 (2021) 032}. Additionally, we studied how the interaction affect the P_k and C_{ll}.

Authors: VALENZUELA TOLEDO, CESAR ALONSO (Departamento de Física, Universidad del Valle); PALACIOS CORDOBA, JOSE LUIS (Universidad Del Valle)

Presenter: PALACIOS CORDOBA, JOSE LUIS (Universidad Del Valle)