

Constraining interacting dark energy with CMB and BAO future surveys

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We perform a forecast analysis to test the capacity of future baryon acoustic oscillation (BAO) and cosmic microwave background (CMB) experiments to constrain phenomenological interacting dark energy models using the Fisher matrix formalism. We consider a Euclid-like experiment, in which BAO measurements is one of the main goals, to constrain the cosmological parameters of alternative cosmological models. Moreover, additional experimental probes can more efficiently provide information on the parameters forecast, justifying also the inclusion in the analysis of a future ground-based CMB experiment mainly designed to measure the polarization signal with high precision. In this context, we consider three phenomenological models which have been deeply investigated in literature over the past years. We find that the combination of both CMB and BAO information can break degeneracies among the dark sector parameters for all three models, although to different extents. We found powerful constraints on, for example, the coupling constant when comparing it with present limits for two of the models, and their future statistical 3-sigma bounds could potentially exclude the null interaction for the combination of probes that is considered.