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Cold dark energy and cosmological parameter estimation

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Cold (or clustering) dark energy models present an interesting phenomenology in comparison to standard homogeneous dark energy.

We investigate the impact of cold dark energy on the background evolution, on the linear level, as well as at the nonlinear level on structure formation. For an accurate description at the nonlinear level, the halo mass function is carefully recalibrated to include the effect of dark energy perturbations, employing the spherical collapse formalism. Using our MCMC likelihood analysis of X-ray cluster samples together with standard cosmological data sets, we constrain cosmological parameters when incorporating these non-linear corrections. We emphasize the impact on the constraints of the cosmological parameters when taking into account dark energy perturbations for cold dark energy.

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