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Galaxy cluster cosmology with the future Euclid sample

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The upcoming Euclid survey will increase the number of optically detected galaxy clusters by several orders of magnitude. In this work, we present a pipeline for the cosmological analysis of the future Euclid sample of galaxy clusters.

We propose a framework including individual lensing mass estimates for the future galaxy cluster sample obtained with matched filtering. This method allows a joint calibration of the cosmological and scaling relation parameters, with the correlation between the richness and lensing mass estimates constrained blindly.

We forecast Euclid's performances with this method for different cosmological scenarios (LambdaCDM, w0waCDM) and analyze the relative importance of the sources of uncertainty for a catalog of this size.

Using a realistic selection function, we obtained competitive constraints, with the budget of errors dominated by halo mass function uncertainties and the observable-mass relation.

Primary author: Dr ARTIS, Emmanuel (LPSC)

Presenter: Dr ARTIS, Emmanuel (LPSC)