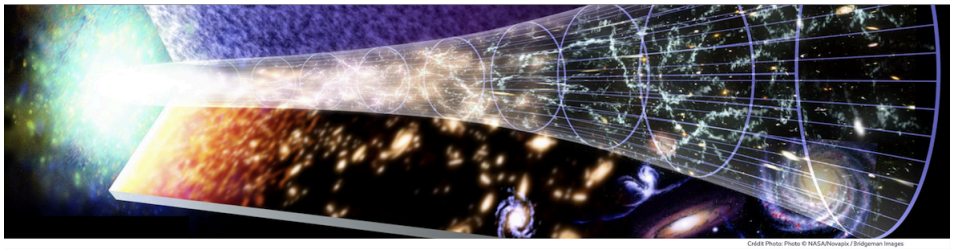

ID de Contribution: **26** Type: **Non spécifié**

Cosmological constraints from the Planck cluster catalogue with DES weak-lensing mass calibration

mercredi 16 avril 2025 09:00 (25 minutes)

Galaxy clusters are a powerful cosmological probe: they track the most recent evolution of large scale structure and therefore are fundamental for testing the cosmological model in the recent Universe. To compare the observations of galaxy clusters with theoretical predictions and thus constrain the cosmological parameters of the underlying model, precise knowledge of cluster masses and redshifts is required. Assuming hydrostatic equilibrium, cluster masses can be inferred from X-ray observations for a subset of the Planck cosmological cluster sample. Using scaling relations, hydrostatic masses can be computed for the full sample from the Y_{SZ} signal. However, these masses are biased since they do not account for the complex physics at play in galaxy clusters, including shocks, non-thermal pressure and deviation from equilibrium. Weak-lensing data, that gives access to the full mass of the cluster, can be used to correct for this bias. We use wide-field galaxy survey data from the Dark Energy Survey in order to calibrate the mass bias, and use it to obtain new constraints on the cosmological parameters. We compare our results to those from recent analyses based on various cosmological probes, with a specific focus on the eROSITA constraints that share the same mass calibration data set and procedure. We also provide forecast on the potential constraining power of the Planck catalogue when combined with future Stage IV lensing data and discuss the impact of miscentering on the final cosmological constraints.

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