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Synergies with sub-mm and mm observations

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The forthcoming experiments aimed at observing the Cosmic Microwave Background (CMB) polarization (e.g. Simons Observatory, SO and CMB-Stage IV, CMB-S4), are expected to survey half of the sky at frequencies between 30 and 280 GHz and $\sim 1'$ resolution with an unprecedented sensitivity. Most of the extragalactic detections will employ active galactic nuclei (AGNs) and dusty star-forming galaxies (DSFGs), together with transient sources such as Gamma Ray Burst (GRB) afterglows and Tidal disruption events. This large frequency coverage will complement low frequency radio continuum surveys (e.g., VLA/VLASS, ASKAP/EMU, MeerKAT/MIGHTEE), and it will allow to assess the spectral energy distributions of AGN selected at lower frequencies and observed up to 300 GHz thanks to the large area of overlap among the aforementioned surveys.

In this contribution, we will present the status of SO (whose commissioning phase is about to start early next year) and the CMB-S4 expected timeline (to be deployed in 2027), together with the projected forecasts of the two experiments in terms of AGN detections.

We will devote a specific focus on the synergies with the low-frequency surveys. Particularly, we will show the latest results from literature used to simulate radio galaxies (Li et al 2021, Stein et al. 2020) and the reciprocal complementarity that these co-eval data will represent for both the CMB and the radio communities.

Research area

Cosmology

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