

SPT-3G: Results and updates

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SPT-3G, the third-generation camera on the South Pole Telescope, observes cosmic microwave background (CMB) anisotropies with arcminute resolution and $4.5 \mu\text{K arcmin}$ coadded noise in temperature. Recent analyses of polarization data from the 2019 and 2020 seasons have yielded the most precise reconstruction of the E-mode spectrum above $\ell = 2000$ and the CMB lensing spectrum above $L = 350$. From these measurements, we constrained ΛCDM cosmological parameters, finding results consistent with Planck while indicating a 5.4 sigma tension with distance ladder estimates of H_0 . We also observe a slight tension in S_8 with low-redshift probes. Ongoing efforts toward forthcoming SPT-3G analyses, which feature the temperature of the main field and wider observations in both temperature and polarization, will further enhance the constraining power on cosmological parameters, providing robust, independent tests of the ΛCDM model and exploring potential hints of physics beyond the standard model. For the main field particularly a detailed analysis will be published in a forthcoming study.

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