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Impact of filtering along different scanning directions on CMB galactic foregrounds

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We investigate the impact of scan direction-dependent time domain filtering in Simons Observatory SATs. SO SATs scan in azimuth at constant elevation, separated into “rising” and “setting” scans. Simple filter+bin map-making produce biased CMB maps that can be corrected at the power spectrum level via a transfer function (estimated from simulations). While this correction is robust for a random CMB field, it may not be able to capture the effects of filtering anisotropic Galactic foregrounds.. Using simulations, we split the data into rising and setting subsets, estimate a CMB transfer function for each split, compute the corresponding power spectra, and perform rising-setting null tests to quantify residual inconsistencies attributable to differential filtering. We repeat the analysis for several galactic masks with increasing sky fractions to characterize how the effect evolves from the galactic plane to less directionally coherent regions.

Speaker information

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