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Development of a Cryogenic Half-wave Plate for Simons Observatory

Simons Observatory (SO) is the largest ground-based CMB experiment in history. SO is developing Small Aperture Telescopes (SATs) to detect the primordial B-mode signal. The cryogenic half-wave plate (CHWP) is an optical device for SAT which decreases systematic errors in the polarimetry. CHWP modulates polarized signals separating from unpolarized signals; the polarization modulation reduces atmospheric $1/f$ noise and other uncertainties. The CHWP designed for 225/280 GHz band was fabricated and evaluated its performance. Now the CHWP was integrated to the SAT detector. I will report the summary of the CHWP lab tests and the integration test in LBNL.

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