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Characterization of an HWP for CMB circular polarization measurement with POLARBEAR

A half-wave plate (HWP) is often used as a modulator to suppress systematic error in cosmic microwave background (CMB) polarization measurements. An HWP can also be used to measure circular polarization through its optical leakage from circular to linear polarization. The circular polarization of the CMB is predicted to be produced by interactions in the Universe, such as interactions with supernova remnants of population III stars.

In this presentation, I show the results of HWP characterization in the POLARBEAR experiment using data taken in the laboratory, including the optical leakage between circular and linear polarization. I also show the prediction of the circular polarization measurement estimated from the noise level of the previous POLARBEAR result.

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