

Abstract Submitted
for the CUWIP22 Meeting of
The American Physical Society

Modeling and Manufacturing Baffle Panels to Reduce the Impact of Sidelobes in CMB Telescopes KATE OKUN, Case Western Reserve University — Three Mirror Anastigmat (TMA) and Cross-Dragone (CD) Cosmic Microwave Background (CMB) telescopes experience a substantial reduction in image quality caused by significant sidelobe pickup. TMA and CD telescopes have specularly reflecting internal walls that can amplify the effects of the scattered light entering the instrument at wide angles, thus worsening the resulting sidelobes. We aim to reduce the contrast of the sidelobes by lining the cabin in white noise surfaces, called baffle panels, designed to scatter light over a wide range of angles, thus diffusing the sidelobe specular peaks into a DC base. Our research focuses on modeling the scattering caused by the white noise surfaces using phase-sensitive ray tracing and manufacturing such surfaces at a larger scale. We hope to see our analytical model confirm our previous experimental results from the 90-110 GHz range.

Kate Okun
Case Western Reserve University

Date submitted: 10 Jan 2022

Electronic form version 1.4