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Development of a Microwave Calibrator for Cosmological Measurements VINCENT MUTOLO, DAVID CHUSS, MARTIN DEGEORGE, DAVID GREENE, Villanova University, KARWAN ROSTEM, NASA Goddard Space Flight Center, DAVID STILWELL, Villanova University, EDWARD WOLLACK, NASA Goddard Space Flight Center — We are developing a calibrator for an instrument to measure the Cosmic Microwave Background (CMB). The calibrator must fill an approximately 1 meter aperture and have a reflectivity below a few parts in 10,000,000 over a broad spectrum from millimeter-wave radiation through the far-infrared. The geometry of the calibrator is an array of cones that utilizes the high-absorptivity loaded-dielectric in concert with a geometry that maximizes radiative coupling. We are optimizing the geometric taper of the cones to reach the reflectance specification while maintaining manufacturability. The cones are made of an epoxy and stainless steel mixture that provide a highly-absorptive dielectric that is capable of being cast into the desired profile. We are also refining the manufacturing process to reach the challenging physical design specifications.

Vincent Mutolo
Villanova University

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