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Parallel-Plate Test of Gravity At Sub-Millimeter Distances CHARLES HAGEDORN, MATTHEW TURNER, KRISHNA VENKATESWARA, JENS GUNDLACH, University of Washington/CENPA — Gravity has not been experimentally observed at scales smaller than the diameter of human hair, barely smaller than the dark energy length-scale of 85 microns. Our sensitive (10^{-14} N-m/$\sqrt{\text{Hz}}$) torsion balance uses a parallel-plate mass configuration to maximize signal and to create a Gauss's Law null-test of short range gravity. The measurement's sensitivity is comparable to the existing best limits at ~ 56 microns, but with complimentary sources of systematic uncertainty. The talk will highlight our approach to systematic uncertainty and data analysis.

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