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Testing gravity at scales below 100 microns CHARLES HAGEDORN, MATTHEW TURNER, STEPHAN SCHLAMMINGER, JENS GUNDLACH, CENPA, University of Washington — Gravity and the standard model are mathematically incompatible. If there exists a theory that unifies them, then, at some length scale, one or both of them must be modified. A number of contemporary theories of the standard model and cosmology suggest that this scale may be as large as 100 microns. As further motivation, the observed dark energy density, when converted to a length, is 86 microns. We have constructed a null experiment using a new plate geometry torsion balance to test gravity, at and below gravitational strength, to scales of 50 microns and smaller. We will present preliminary results.

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