

Abstract Submitted
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A 10 minute test of the weak equivalence principle¹ ROBERT REASENBERG, EIICHI HIROSE, SAO/CfA, ENRICO LORENZINI, U. Padova, Italy, BIJU PATLA, JAMES PHILLIPS, EUGENIU POPESCU, EMANUELE ROCCO, RAJESH THAPA, SAO/CfA — We are developing a payload for detecting a possible violation of the weak equivalence principle while on a sounding rocket's free-fall trajectory. We estimate an uncertainty of $\sigma(\eta) = 10^{-16}$ from a single night-time flight. A quick experiment with this accuracy is possible because: 1) The principal measurement is by a laser gauge that has a projected measurement uncertainty of $0.1 \text{ pm}/\sqrt{Hz}$; 2) The thermal environment is stable; 3) Payload inversions cancel most systematic error and; 4) The test masses are in unrestrained free fall. I will provide an overview of the project with an emphasis on the features that enable a quick experiment.

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Robert Reasenber
SAO/CfA

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