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Gravity Studies with the ALPHA Antihydrogen Trapping Experiment

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The first stage of the ALPHA experiment succeeded in producing and trapping antihydrogen for long periods of time (minutes) as well as making the first (albeit low accuracy) microwave spectroscopy measurements. During the present LHC shutdown the apparatus was upgraded (so-called ALPHA-2) to allow precision spectroscopy to test CPT. We are now looking beyond that to look at another fundamental question - whether the gravitational interaction between matter and antimatter is identical to that between matter and matter. Specifically we are designing an apparatus (ALPHA-g) to probe this question by seeing how antihydrogen acts in the gravitational field of the Earth. I will describe the present status and future plans of ALPHA-g.

Author: Prof. MENARY, Scott (York University)

Presenter: Prof. MENARY, Scott (York University)

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