Canadian Association of Physicists
Association canadienne des physiciens et physiciennes

Contribution ID: **2675** Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

WITHDRAWN - Magnetometry for Gravitational Measurements of Antihydrogen with ALPHA-g

The Einstein equivalence principle (EEP) has never been directly examined with an antimatter test body. To address this, the ALPHA Collaboration is constructing a new apparatus (ALPHA-g) which can test the EEP using magnetically trapped antihydrogen atoms. I will discuss motivations for these experiments, as well as the methods we intend to employ. In particular, magnetic field characterization will be an essential component of the experimental methodology. The antiatom gravitational energy difference between the top and bottom of our trap is about a factor of 10^4 smaller than the magnetic confinement energies involved. This necessitates the use of precision magnetometers that will allow us to distinguish between the effects of magnetic and gravitational fields on antihydrogen trajectories. We will accomplish the required magnetometry using techniques drawn from the fields of nuclear magnetic resonance and non-neutral plasmas. I will overview these in the context of the greater experiment.

Authors: Mr EVETTS, Nathan (University of British Columbia, Canada); ON BEHALF OF THE ALPHA COLLABORATION

Presenter: Mr EVETTS, Nathan (University of British Columbia, Canada)

Session Classification: T2-11 General Instrumentation (DAPI) | Instrumentation générale (DPAI)

Track Classification: Applied Physics and Instrumentation / Physique appliquée et de l'instrumentation (DAPI / DPAI)