

# Cockcroft Institute Colloquium

## Trapped Antihydrogen for Spectroscopy

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**Tuesday 12<sup>th</sup> April 2011, 14:00**

**Walton Rooms A & B, The Cockcroft Institute**

### Abstract

Antimatter, first predicted by Paul Dirac in 1931 and now routinely observed and created in the laboratory, is the center of a major conundrum in physics: the Standard Model of particle physics predicts that antimatter should have been created in equal quantities to matter at the formation of the universe; so how do we explain its scarcity in the world we live in today? The ALPHA experiment at CERN aims to address this question by making precise spectroscopic measurements of the antihydrogen atom (an antimatter atomic system, formed in this case by carefully merging antimatter plasmas of positrons and antiprotons); even a minute difference between antihydrogen and hydrogen spectra would be a significant clue into this mystery. ALPHA has recently achieved a significant milestone by forming and trapping cryogenic ( $< 0.5$  K) antihydrogen atoms for the first time, thus opening up the door to spectroscopic measurements.