detector seminar

SPEAKER: Joseph Mc Kenna

TITLE: **Silicon Vertex Detector for the detection of antihydrogen in the ALPHA II**

DATE: 6 Apr 2018, 11:00

PLACE: 503-1-001 - Council Chamber

ABSTRACT

The aim of the ALPHA experiment at CERN is to trap cold atomic antihydrogen, study its properties, and ultimately to perform precision comparison between the hydrogen and antihydrogen. The principle tool for antihydrogen detection in the ALPHA experiment is a Silicon Vertex Detector (SVD) composed of 72 double-sided silicon strip hybrid modules designed to surround the neutral atom trap. Recently upgraded, the SVD is used to image single annihilation events, and reconstruct spatial and timing data of antiproton annihilations. The detector performance can be optimised for various physics applications. This ranges from extreme low background suppression for counting experiments, to high signal acceptance and accurate vertex reconstruction used for collective plasma behaviour studies. A description of the SVD specifications, analysis methods, and performance will be given, covering a broad background and an overview of the applications for the SVD in the ALPHA experiment. Highlights will include recent results, improvements in event classification with the aid of machine learning, along with an outlook for the future.

Organised by: Burkhard Schmidt (EP-DT)