



# LHC Seminar

**SPEAKER:** Jeroen Van Tilburg (Ruprecht-Karls-Universitaet Heidelberg (DE))

**TITLE:** **New results on CP violation in the charm sector**

**DATE:** Tue 12/03/2013 11:00

**PLACE:** Council Chamber

## ABSTRACT

The difference in CP violation between the  $D^0 \rightarrow K^+K^-$  and  $D^0 \rightarrow \pi^+\pi^-$  decays ( $\Delta A_{CP}$ ) has emerged as an interesting observable to search for matter-antimatter asymmetries in the charm sector. By taking the difference between the two modes, most of the asymmetries induced by the detector or coming from the production mechanism cancel. A previous LHCb measurement, using  $0.6 \text{ fb}^{-1}$  of data, gave  $3.5\sigma$  evidence for CP violation in the charm sector, which was further strengthened by results from the CDF and Belle collaborations. We present an update of the  $\Delta A_{CP}$  measurement, consisting of two independent analyses, both using the full 2011 data set of  $1.0 \text{ fb}^{-1}$ . In the first, the initial flavour of the D meson ( $D^0$  or  $D^0\text{-bar}$ ) is inferred from the charge of the slow pion in the decay  $D^{*+} \rightarrow D^0\pi^+$ , as in the previous publication. The second uses D mesons produced in semileptonic B decays, where the charge of the associated muon provides the tag.