LHC Seminar

SPEAKER: Jan Steggemann

TITLE: **Observation of the SM Higgs boson decaying to a pair of τ leptons with the CMS detector**

DATE: 18 Jul 2017, 11:00

PLACE: 503-1-001 - Council Chamber

ABSTRACT

A search for the standard model Higgs boson decaying into a pair of τ leptons is performed using events recorded in proton-proton collisions by the CMS experiment at the LHC in 2016. The data set corresponds to an integrated luminosity of 35.9 fb−1 at a center-of-mass energy of 13 TeV. The τ leptons decay semi-hadronically, or leptonically to an electron or a muon, and the four decay channels with the largest branching fractions are considered. An excess of events is observed over the expected background prediction with a significance of 4.9 standard deviations for a Higgs boson mass mH = 125 GeV, to be compared to an expected significance of 4.7 standard deviations. The best fit of the product of the observed H → ττ signal cross section and branching fraction for mH = 125 GeV is 1.09+0.27−0.26 times the standard model expectation. The combination with the search for decays of the Higgs boson into pairs of τ leptons performed with data collected by the CMS experiment at the LHC at center-of-mass energies of 7 and 8 TeV leads to an observed significance in excess of 5 standard deviations.

Organised by: M. Mangano, C. Lourenco, G. Unal.....
Refreshments will be served at 10h30