



LHC Seminar

SPEAKER: Gabor Veres (CERN)

TITLE: **New results of novel long-range correlations in high-multiplicity pp collisions at 7 and 13 TeV from CMS**

DATE: Tue 20/10/2015 11:00

PLACE: Council Chamber

ABSTRACT

In 2010, CMS reported the observation of a novel long-range two-particle angular correlation in high-multiplicity pp collisions at 7 TeV, where an enhanced correlation for particles emitted at similar azimuthal angle (ϕ) over a wide range in pseudorapidity (known as the "ridge") is observed. This ridge correlation phenomenon was not seen in pp collisions before but reminiscent of similar effect first seen in high-energy nucleus-nucleus collisions, which is attributed to collective flow of a strongly interacting, expanding quark-gluon medium. Later on, similar ridge correlations were also observed in high-multiplicity pPb collisions and studied in great detail by all LHC experiments. The start of the LHC run 2 brought new opportunities of exploring novel QCD emergent phenomena in pp collisions at the highest energy ever achieved. First CMS results on QCD physics in pp collisions at 13 TeV are presented and compared to the 7 TeV data. This includes the measurement of charged particle multiplicity for minimum bias events and long-range two-particle $\Delta(\eta)$ - $\Delta(\phi)$ correlations for high-multiplicity events. Dedicated studies in pPb and PbPb collisions to examine possible hydrodynamic flow origin of the ridge, anisotropy Fourier harmonics (v_n) are extracted from long-range $\Delta(\phi)$ correlations, after accounting for contributions from back-to-back jet correlations, for charged, K0s and Lambda particles as a function of pT and event multiplicity. Furthermore, a study of multiparticle azimuthal correlations is presented to directly explore possible collective nature of the ridge correlations.

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