

Correlations and fluctuations measured by the CMS experiment in pp and PbPb collisions

Thursday, May 26, 2011 11:15 AM (25 minutes)

Measurements of charged dihadron angular correlations are presented in proton-proton (pp) and Lead-Lead (PbPb) collisions, over a broad range of pseudorapidity and azimuthal angle, using the CMS detector at the LHC. In very high multiplicity pp events at center-of-mass energy of 7 TeV, a striking “ridge”-like structure emerges in the two-dimensional correlation function for particle pairs with intermediate p_T of 1-3 GeV/c, in the kinematic region $2.0 < |\Delta\eta| < 4.8$ and small $\Delta\Phi$, which is similar to the observation in heavy-ion collisions. Updated studies of this new effect as a function of particle transverse momentum, rapidity and event characteristics are shown and discussed in comparison to various model calculations. The long-range and short-range dihadron correlations are also studied in PbPb collision at a nucleon-nucleon center-of-mass energy of 2.76 TeV. The dependence of the jet-and ridge-region shape and yield on transverse momentum and collision centrality has been measured. A Fourier analysis of the long-range dihadron correlations will be presented and discussed in the context of CMS measurements of higher order flow coefficients.

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Session Classification: Correlations & fluctuations

Track Classification: Correlations and fluctuations