



XXIV QUARK MATTER DARMSTADT 2014

Contribution ID: 708

Type: Poster

Bose-Einstein correlations with identified particles in CMS

Tuesday, May 20, 2014 4:30 PM (2 hours)

Short range correlations of identified charged hadrons in pp ($\sqrt{s} = 0.9, 2.76, \text{ and } 7 \text{ TeV}$), pPb ($\sqrt{s_{NN}} = 5.02 \text{ TeV}$), and peripheral PbPb collisions ($\sqrt{s_{NN}} = 2.76 \text{ TeV}$) are studied with the CMS detector at the LHC. Charged pions, kaons, and protons at low p_T and in laboratory pseudorapidity $|\eta| < 1$ are identified via their energy loss in the silicon tracker. The two-particle correlation functions show effects of quantum statistics, Coulomb interaction, and also indicate the role of multi-body resonance decays and mini-jets. The characteristics of the one-, two-, and three-dimensional correlation functions are studied as a function of pair momentum and the charged-particle multiplicity of the event. The extracted radii are in the range 1-5 fm, reaching highest values for very high multiplicity pPb, also for similar multiplicity PbPb collisions, and decrease with increasing k_T . The dependence of radii on multiplicity and k_T largely factorizes and appears to be insensitive to the type of the colliding system and center-of-mass energy.

On behalf of collaboration:

CMS

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Session Classification: Poster session

Track Classification: Correlations and Fluctuations