



LHC Seminar

SPEAKER: Dhevan Raja Gangadharan (Lawrence Berkeley National Lab. (US))

TITLE: **Quantum statistics measurements using 2-, 3- and 4-pion Bose-Einstein correlations**

DATE: Tue 14/10/2014 11:00

PLACE: Council Chamber

ABSTRACT

Quantum statistics correlations are sensitive to the space-time size of the particle-emitting source as well as to the degree of quantum coherence in the final state.

Coherent pion radiation in high-energy collisions may arise, for instance, from the formation of a disoriented chiral condensate. The coherence of pions is expected to suppress Bose-Einstein correlations. The amount of suppression increases for higher order correlations. The comparison of 2-, 3-, and 4-pion correlations allows for a less unambiguous measure of the coherent fraction.

The coherent fractions extracted by ALICE are found to be non-zero in Pb-Pb collisions, which challenges the hydrodynamic descriptions of the collision.

We also present measurements of the source radii with 3-pion Bose-Einstein cumulants in pp, p-Pb, and Pb-Pb collisions. The resulting comparisons of the radii in all three systems at similar multiplicity has implications on the hydrodynamic modelling of high-energy collisions.