



Contribution ID: 54

Type: **not specified**

Correlations and fluctuations of pions at the LHC

Wednesday 4 November 2015 14:50 (25 minutes)

The intriguing possibility of Bose-Einstein condensation of pions (BEC) at the LHC [1-3] is examined with the use of higher order moments of the multiplicity distribution. The scaled variance, skewness and kurtosis are calculated for the pion system in and out of chemical equilibrium. The effects of resonance decays are estimated. The obtained results show the possibility to see a significant increase of the kurtosis for the case of BEC in the measured data.

[1] Bose-Einstein condensation of pions in heavy-ion collisions at the CERN Large Hadron Collider (LHC) energies By Viktor Begun, Wojciech Florkowski. arXiv:1503.04040 [nucl-th]. Phys.Rev. C91 (2015) 054909.

[2] Transverse-momentum spectra of strange particles produced in Pb+Pb collisions at $\sqrt{s_{NN}}=2.76$ TeV in the chemical non-equilibrium model By Viktor Begun, Wojciech Florkowski, Maciej Rybczynski. arXiv:1405.7252 [hep-ph]. Phys.Rev. C90 (2014) 5, 054912.

[3] Explanation of hadron transverse-momentum spectra in heavy-ion collisions at $\sqrt{s_{NN}}=2.76$ TeV within chemical non-equilibrium statistical hadronization model By Viktor Begun, Wojciech Florkowski, Maciej Rybczynski. arXiv:1312.1487 [nucl-th]. Phys.Rev. C90 (2014) 1, 014906.

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Session Classification: Session 6