



Contribution ID: 144

Type: Talk

## Event-by-event multiplicity fluctuations in Pb–Pb collisions at 2.76 TeV with ALICE at LHC

Monday 12 September 2022 15:20 (20 minutes)

Local multiplicity fluctuations are a useful tool to understand the dynamics of the particle production and the phase-space changes from quarks to hadrons in ultrarelativistic heavy-ion collisions. The study of scaling behavior of multiplicity fluctuations in geometrical configurations in multiparticle production can be done using the factorial moments and recognized in terms of a phenomenon referred to as intermittency.

In this contribution, we present the first factorial moment analysis performed on the multiplicity distributions of charged particles produced in the Pb–Pb collisions at  $\sqrt{s_{NN}} = 2.76$  TeV, recorded with the ALICE detector at the LHC. The normalized factorial moments (NFM),  $F_q$  of the spatial configurations of charged particles in two-dimensional angular  $(\eta, \varphi)$  phase space are calculated. For a system with dynamic fluctuations due to the characteristic critical behaviour near the phase transition,  $F_q$  exhibits power-law growth with increasing bin number or decreasing bin size which indicates self-similar fluctuations. Relating the  $q^{\text{th}}$  order NFM ( $F_q$ ) to the second-order NFM ( $F_2$ ), the value of the scaling exponent ( $\nu$ ) is extracted, which indicates the order of the phase transition within the framework of Ginzburg-Landau theory. The dependence of scaling exponent on the  $p_T$  bin width and the centrality of the events will be presented. The measurements are compared with the corresponding results from the AMPT, HIJING and Toy Monte Carlo models.

### Is this abstract from experiment?

Yes

### Name of experiment and experimental site

ALICE, CERN

### Is the speaker for that presentation defined?

Yes

### Details

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### Internet talk

Maybe

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**Session Classification:** Heavy Ion Collisions and Critical Phenomena

**Track Classification:** Main topics: Heavy Ion Collisions and Critical Phenomena