



Contribution ID : 181

Type : Oral talk

## Self-similarity and Cumulative Hadron Production in Heavy Ion Collisions at High Energies

Thursday, 24 October 2024 17:50 (15)

Search for signatures of phase transitions and determination of phase diagram of nuclear matter created in A+A collisions are in the heart of the heavy ion programs performed present at RHIC, LHC and future experiments at NICA and FAIR. In the paper the hypothesis of the self-similarity of hadron production in relativistic heavy-ion collisions to search for the phase transition in nuclear matter is discussed. Using the established features of z-scaling is suggested to reveal the signatures of new physics in the cumulative region. Selection of the cumulative events is assumed to enrich data sample by a new type of collisions characterized by higher energy density and more compressed matter. We expect that this would allow finding clearer signatures of phase transition, location of a critical point and studying extreme conditions in heavy ion collisions. The change in the parameters of the theory (a specific heat and fractal dimensions) near the critical point is considered a signature of new physics. The results of data analysis of cumulative production in p+A and A+A collisions in collider and fixed target mode are discussed.

1. M.Tokarev and I.Zborovský, Phys. Part. Nucl. Lett., 7 (2010) 160.
2. M.Tokarev, I.Zborovský and A.A.Aparin, Phys. Part. Nucl. Lett., 12 (2015) 324.
3. M.Tokarev, A.Kechechyan, and I.Zborovský, Nucl. Phys., A 993 (2020) 121646).
4. M.Tokarev and I.Zborovský, Nucl. Phys., A1025 (2022) 122492.

**Primary author(s) :** Prof. TOKAREV, Mikhail (Joint Institute for Nuclear research); Dr. I. ZBOROVSKÝ, Imrich (Academy of Sciences of the Czech Republic, Řež, Czech Republic)

**Presenter(s) :** Prof. TOKAREV, Mikhail (Joint Institute for Nuclear research)

**Session Classification :** Heavy Ion

**Track Classification :** Heavy ion physics