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# FRACTAL ANALISIS OF Au+Au MONTE CARLO EVENTS AT 200 GEV/c

*Wednesday, 13 July 2022 17:10 (20 minutes)*

Results of fractal analysis of Au+Au events at the energy of $\sqrt{s_{NN}} = 200$ GeV/c by the method of the equation systems of power coverings (SePaC) [1] are presented. A Multi-Phase Transport (AMPT) model [2,3] to generate events in relativistic heavy ion collisions was used. In Event-by-Event analysis a distribution on the transverse momentum $p$ of negatively charged particles produced in the pseudo-rapidity interval $|\eta| < 0.5$ in the events with different centrality from 0-5% to 30-40% was studied.
The fractal data set includes 1823 events obtained by independent [4], dependent [5], and combined [6] partition. Fractal events differ in multiplicity (from 8 to 1024), the base of formation $P_F$ (from 3 to 8), and the type of structures. The criteria characterizing the similarity of structures at different levels and reducing the portion of background events (mixed data, events with Gaussian, exponential, and uniform distributions) [7] were used.
Comparison of the Monte Carlo fractals, random events and AMPT events was performed. It was found that the multiplicity distribution for the sets of random events coincides with the distribution obtained using the AMPT generator. Distribution of fractal events with different multiplicity on the dimension DF was obtained and their structure is discussed. The results of applying the selection criteria for various types of events are presented.

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4. T. G. Dedovich, M.V. Tokarev, Phys. Part. Nucl. Lett. 10, 481 (2013).
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6. T. G. Dedovich, M.V. Tokarev, Phys. Part. Nucl. Lett. 13, 169 (2016).
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## The speaker is a student or young scientist

No

## Section

1. Intermediate and high energies, heavy ion collisions

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