Contribution ID: **24**   Type: **not specified**

Search for Fractal Structures in Monte – Carlo AuAu Events at Energy $\sqrt{s_{NN}} = 200$ GeV by SePaC Method

Friday, 22 September 2023 15:30 (20 minutes)

Monte Carlo (MC) AuAu events at the energy of $\sqrt{s}NN = 200$ GeV obtained using A Multi-Phase Transport (AMPT) generator [1, 2], MC fractals and events with randomly distributed particles are analyzed by the SePaC method [3]. The dependence of the portion Prtn of the events under study, determined by the method as fractals, on the parameter PMax was studied. It was found that the hypotheses of independent and dependent division of fractals correspond to different regions of the Prtn(PMax) distribution for the MC of AuAu events. Such a behavior allows us to apply the SePaC method [4,5] with different hypothesis separately [4,5]. It is shown that the distributions of events on the fractal dimension DF are different for these hypotheses. It was found that the events reconstructed by the independent division hypothesis have a group of leading particles in the transverse momentum space, while the remaining ones show the exponential behavior of the pt spectrum. The results of applying criteria describing the statistical characteristics of structures [6] showed that a large fraction of events (86%) reconstructed by the independent division hypothesis have the same fractal structures at different levels.

1. Z.W. Lin, C.M. Ko, Phys. Rev. C 65, 034904 (2002).
2. Z.W. Lin et al., Phys. Rev. C 72, 064901 (2005).
3. T. G. Dedovich, M.V. Tokarev, Phys. Part. Nucl. Lett. 9, 552 (2012).
4. T. G. Dedovich, M.V. Tokarev, Phys. Part. Nucl. Lett. 10, 481 (2013).
5. T. G. Dedovich, M.V. Tokarev, Phys. Part. Nucl. Lett. 10, 491 (2013).
6. T. G. Dedovich, M.V. Tokarev, Phys. Part. Nucl. Lett. 18, 93 (2021).

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Session Classification: Parallel: Dynamics of multiparticle production