

Initial state fluctuations and complete destruction of the projectile nucleus in interactions of asymmetric nuclei at high energies

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A study of characteristics of the events of complete destruction of the projectile nucleus in the interactions between asymmetric nuclei for different initial states of the collision, is performed. For experimental studies of nucleus-nucleus interactions in this work, we applied the method of nuclear emulsions. Main distributions of secondary particles for the individual events of complete destruction of the projectile nucleus, are considered. A comparative analysis of average characteristics of similar distributions of secondary particles, is implemented. In the interactions of the sulfur nuclei with heavy emulsion nuclei at energy 200 AGeV, anomalous high number of events the complete destruction of the projectile nuclei, is observed. They have the following distinctive peculiarities. The probability of such events depends on the energy of interaction (they are not detected in the interactions between the sulfur nuclei with emulsion nuclei at energy of 3.7 AGeV) and the degree of asymmetry of the interacting nuclei (they are not detected in interactions of heavy nuclei with nuclei of photoemulsion). These events are characterized by high multiplicity of secondary particles and narrow angular distribution at large angles (they have narrow peak in the region of small values of average pseudorapidity).

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