

Femtосcopy of the system shape fluctuations in heavy ion collisions

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The system created in a heavy ion collision in general is not azimuthally symmetric; moreover, the initial spatial distribution, e.g. that of the energy density, fluctuates event-by-event even at fixed impact parameter. Because of particle interactions, this initial spatial asymmetry leads to anisotropies in particle emission – the phenomenon called anisotropic flow. The best known anisotropy of this kind is the elliptic flow that is described by the second harmonic in particle azimuthal distribution. Recently, the so-called triangular, and higher harmonic flow, and in particular their sensitivity to the system initial conditions attracted a lot of attention, as they might provide additional important information about the initial conditions and dynamical properties (e.g. viscosity) of the system.

Fluctuations in the initial geometry should be also reflected in the detail shape of the system at freeze-out. In this talk I discuss the possibility to measure such fluctuations by means of identical and non-identical particle femtoscopy. I support my conclusion on the sensitivity of the method to measure triangularity and higher harmonic spatial asymmetries by analytical calculations, and by results from event generators and blast wave model calculations.

Primary author: Prof. VOLOSHIN, Sergei (Department of Physics and Astronomy-College of Science-Wayne Sta)

Presenter: Prof. VOLOSHIN, Sergei (Department of Physics and Astronomy-College of Science-Wayne Sta)

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