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Influence of fluctuating initial-state shape deformations in ultra-central collisions[1] PEIFENG LIU, ROY LACEY, Stony Brook University — It is a long standing puzzle that hydrodynamic calculations give larger elliptic flow for ultra-central Pb+Pb events than experiments. One explanation is that sampling from a single particle distribution in Glauber model generates too much shape fluctuation, which can be expected to be modified by NN correlations. We study the fluctuation of shape-deformation as currently implemented in MC-Glauber-like models and its consequences on the magnitude of eccentricities. We show that for both deformed and spherical species, there are large fluctuations in the deformation that emerge event-by-event. For each nucleonic configuration, we characterize the deformation with parameters β and γ, calculated using quadruple moments. The second order eccentricity ε_2 shows a strong correlation with the E-by-E deformation β's for ultra-central collisions. We further show, via acoustic scaling, with a moderate reduction of β by rescaling, the eccentricities we get then agree with the measured values of v_n, for all experimentally available centrality bins. Therefore, the model provides eccentricities that describe experimental data, both where geometry dominates and where fluctuation dominates.

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