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Type: **Experimental**

Source eccentricity at freeze-out measured by HBT interferometry with the event shape selection

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The higher order flow anisotropies (v_n) are considered to be originated from initial geometrical fluctuation of participating nucleons followed by the collective expansion of the hot and dense medium created in high-energy heavy-ion collisions. The source geometry with possible fluctuation at the end of the expansion would depend on the magnitude of the initial fluctuation, the strength of the expansion, the expansion time and the viscosity of the medium.

The higher order final spatial anisotropies (ϵ_n) can be accessible by Hanbury Brown and Twiss (HBT) interferometry with respect to higher order event planes (Ψ_n), which is expected to reflect the geometrical size and shape at the end of the freeze-out.

We examine the correlation between magnitude of v_2 and magnitude of ϵ_2 by selecting the magnitude of flow-vector which defines the 2nd order event plane (Ψ_2) and by looking at the Ψ_2 dependence of HBT parameters. Recent result on it from PHENIX will be presented and discussed.

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