Is there flow without flow at RHIC?

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Abstract

The azimuthal anisotropy in final particle distributions, elliptic flow, is usually understood to be a signal of collective motion of particles, i.e. flow. We demonstrate that it is possible to have a source which exhibits elliptic flow but no radial flow.

We compare the emission from a non-flowing source and hydrodynamical calculation and notice that the tranverse momentum dependence of elliptic flow is different enough to be a signal of collective motion. We compare the results to recent data by STAR collaboration and notice that hydrodynamical calculation fits the data not only qualitatively but also quantitatively.

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