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Flow vorticity in Peripheral high-energy heavy ion collisions

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The vorticity development is studied in the reaction plane of peripheral relativistic heavy ion reactions where the initial state has substantial angular momentum. The rotation effect and Kelvin Helmholtz Instability (KHI), lead to significant initial vorticity and circulation. This is also shown in an exact analytical fluid dynamic model, the conditions for the development of KHI for the QGP are also investigated. In low viscosity QGP the vorticity remains still significant at the time of freeze out of the system, even if damping due to the explosive expansion and the dissipation decreases the vorticity and circulation. The vorticity arises from the initial angular momentum in the reaction plane, and it is stronger than in the transverse plane, where only the random fluctuations lead to vorticity.

On behalf of collaboration:

None

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