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Femtoscopy of rotating sources

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In heavy-ion collisions, as two nuclei go through each other and form hot and dense matter they also transfer some of the angular momentum to the fireball, resulting in the non-zero vorticity. The connection between the initial-state, equation of state and vorticity exists and is of special interest. In this case coarse-graining of non-central Au+Au heavy-ion collisions at $E_{lab} = 1.23$ AGeV is performed in order to extract collective velocity as a function of position and time. The rotation modifies space-time picture of particle emission leading to profound consequences for proton-pion femtoscopic correlations. A novel approach to extract source functions of a rotating system from correlation functions is presented and distance between proton and pion emission centers are used as a quantity related to the strength of rotation. Thus a new way to measure vorticity is obtained.

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