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Energy and baryon emission surfaces in relativistic heavy ion collisions via HBT Correlations

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The Hanbury Brown-Twiss (HBT) interferometry technique uses the two-particle correlation function to extract the three HBT radii, which measure the spatial and temporal dimensions of the particle emission source at freeze-out in heavy-ion collisions. In this study, we have employed a hybrid model combining hydrodynamic evolution with hadronic transport to simulate the collision dynamics in the presence of QCD conserved charges, most importantly the baryons. We investigate the possibility of accessing the emission sources of energy and baryon via meson-baryon-antibaryon splitting in the HBT radii that offer a unique insight into the freezeout processes and through that into their respective initial conditions.

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