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Sensitivity of anisotropy flow coefficients and lengths of homogeneity to different equations of state

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In this work we perform a systematic study of the dependence on the equation of state of the collective flow coefficients and of the Hanbury-Brown and Twiss femtoscopic parameters, by using the SPHERIO hydrodynamic code to describe the evolution of heavy-ion collisions. The calculations are carried out both in the center-of-mass frame and in the longitudinal co-moving system, for heavy ion collisions at 130 GeV and 200 GeV energies at the Relativistic Heavy Ion Collider. The resulting anisotropy flow coefficients v_2 , v_3 , v_4 , as well as the femtoscopic lengths of homogeneity, are compared with the data from STAR, PHOBOS and PHENIX Collaborations. It is shown that, although the three different types of equation of state investigated in this work give a reasonable description of the observed data, none is clearly favored in this comparison.

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