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Non-equilibrium kinetic freeze-out properties in relativistic heavy ion collisions from RHIC Beam Energy Scan to LHC[1] JIA CHEN, Shandong Univ — In this talk, we investigate the kinetic freeze-out properties in relativistic heavy ion collisions at different collision energies. We present a study of BGBW fits and TBW fits performed on p_T spectra of identified hadrons produced in Au + Au collisions at collision energies of $\sqrt{s_{\rm NN}}$ = 7.7 - 200 GeV at RHIC, and in Pb + Pb collisions at collision energies of $\sqrt{s_{\rm NN}}$ = 2.76 and 5.02 TeV at LHC. The behavior of strange and multi-strange particles is also investigated. We found that the TBW model describes data better than the BGBW one overall, and the contrast is more prominent as the collision energy increases as the degree of non-equilibrium of the produced system is found to increase. From TBW fits, the kinetic freeze-out temperature at the same centrality shows a weak dependence of collision energy between 7.7 and 39 GeV, while it decreases as collision energy continues to increase up to 5.02 TeV. The radial flow is found to be consistent with zero in peripheral collisions at RHIC energies but sizable at LHC energies and central collisions at all RHIC energies. We also observed that the strange hadrons, with higher temperature and similar radial flow, approach equilibrium more quickly from peripheral to central collisions than light hadrons.

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