**Heavy ion collisions at LHC in a multiphase transport model**

L. W. Chen,[1] C. M. Ko, B. A. Li,[2] Z. W. Lin,[3] and B. W. Zhang[4]

[1]*Institute of Theoretical Physics, Shanghai Jiao Tong University, Shanghai 200240, China*
[2]*Department of Physics, Texas A&M University-Commerce, Commerce, Texas 75429-3011*
[3]*Department of Physics, East Carolina University, Greenville, North Carolina 27858-4353*
[4]*Institute of Particle Physics, Central China Normal University, Wuhan 430079, China*

Using a multiphase transport (AMPT) model [1], we have studied heavy ion collisions at the Large Hadron Collider (LHC) at CERN [2,3]. The charged hadron pseudorapidity distribution is found to show a clear plateau structure with a value of about 2500 and 4500, respectively, with and without nuclear shadowing, which are about a factor of three larger than corresponding ones at RHIC. The inverse slope parameters of the transverse momentum spectra of identified midrapidity hadrons are larger than those at RHIC as a result of stronger final-state rescatterings at LHC. Based on a parton scattering cross section of 10 mb, which is needed to describe observed hadron elliptic flows at RHIC, the elliptic flows of light and heavy quarks at LHC display the expected mass ordering at low transverse momenta, i.e., the elliptic flow is smaller for quarks with larger masses. Compared to those at RHIC, the elliptic flow of pions at LHC is larger while that of protons is smaller. The elliptic flows of heavy mesons, which are estimated from those of quarks using the quark coalescence or recombination model, are dominated by those of heavy quarks, while those of the quarkonia J/ψ and Y consisting of a heavy quark and its antiquark and having certain transverse momentum are simply twice those of their constituent heavy quarks at half the momentum. The correlation functions in the longitudinally comoving frame of pions or kaons at LHC, calculated from the positions and momenta of pions or kaons at freeze out, are narrower than at RHIC. Fitting the correlation functions by Gaussian functions, extracted source radii at LHC are larger than those at RHIC. In both collisions, radii of the emission source for pions are larger than those for kaons. As at RHIC, the smaller lambda parameter for pions than for kaons is due to the large halo in the pion emission source from decays of omega mesons. Also, the emission sources are non-Gaussian and are shifted in the direction of the pion or kaon transverse momentum.

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