

Charged-hadron pseudorapidity distributions in the RDM at LHC energies

The energy dependence of charged-hadron production in relativistic heavy-ion collisions is investigated in a nonequilibrium-statistical relativistic diffusion model (RDM) with three sources [1]. Theoretical pseudorapidity distributions are compared with PHOBOS AuAu data [2] at RHIC energies of $\sqrt{s_{NN}} = 0.13$ and 0.2 TeV including the centrality dependence, and computed for PbPb central collisions at LHC energies of 2.76 and 5.52 TeV.

Whereas the quark-gluon fragmentation sources are most important at RHIC energies, the nearly equilibrated source near midrapidity that arises from gluon-gluon collisions becomes the major origin of particle production at LHC energies. This is confirmed in a comparison with recent ALICE data on charged-hadron pseudorapidity distributions in 2.76 TeV PbPb [3]. The midrapidity dip is determined by the interplay of the three sources [4].

[1] G. Wolschin, Prog. Part. Nucl. Phys. 59 (2007) 37.

[2] B. Alver et al. (PHOBOS Collaboration), Phys.Rev.C 83 (2011) 02491.

[3] K. Aamodt et al. (ALICE Collaboration), Phys. Rev. Lett. 105 (2010) 25230;
Phys. Rev. Lett. 106 (2011) 032301.

[4] G. Wolschin, arXiv:1102.3388 (2011); Phys. Lett. B, in press.

Primary author: WOLSCHIN, Georg (Heidelberg University)

Presenter: WOLSCHIN, Georg (Heidelberg University)

Track Classification: Hadron thermodynamics and chemistry