

The BRAHMS results on the proton-to-pion ratio pT-dependence in the RHIC range of baryo-chemical potential

Thursday 16 July 2009 16:30 (20 minutes)

The BRAHMS results on the proton-to-pion ratio pT-dependence
in the RHIC range of baryo-chemical potential

N. Katryńska, Z. Majka (for the BRAHMS Collaboration)

BRAHMS measurement of proton-to-pion ratios in Au+Au and p+p at $(s \text{ NN})^{1/2} = 62.4 \text{ GeV}$ and 200 GeV will be presented as a function of transverse momentum and collision centrality within the pseudorapidity range $0 < \eta < 3$. The baryo-chemical potential, μ_B , for the indicated data spans from $\mu_B \sim 25 \text{ MeV}$ ($(s \text{ NN})^{1/2} = 200 \text{ GeV}$, $\eta = 0$) to $\mu_B \sim 260 \text{ MeV}$ ($(s \text{ NN})^{1/2} = 62.4 \text{ GeV}$, $\eta \sim 3$) [1]. A striking agreement between $p/\pi(p \text{ T})$ ratio measured for Au+Au collisions at $(s \text{ NN})^{1/2} = 200 \text{ GeV}$ ($\eta \sim 2.2$) and at $(s \text{ NN})^{1/2} = 62.4 \text{ GeV}$ ($\eta \sim 0$) is observed, where the properties of the bulk medium can be described with the common value of $\mu_B = 65 \text{ MeV}$. The p/π ratio for Au+Au system at $(s \text{ NN})^{1/2} = 62.4 \text{ GeV}$, $\eta \sim 3$ reaches astounding value of 8-10 at $p \text{ T} = 1.5 \text{ GeV}/c$. For these energy and pseudorapidity interval no centrality dependency of p/π ratio is observed. Comparison of the measured p/π^+ and p/π^- ratios at different beam energies and rapidities with theoretical models [2,3,4] will be provided.

[1] I. Arsene, Quark Matter Conference 2006, Shanghai, China, November 14-22, 2006.

[2] R. C. Hwa and C. B. Yang, Phys.Rev. C 78, (2008) 024907.

[3] W. Broniowski, B. Biedroń, Phys. Rev. C 75, (2007) 054905.

[4] Lin, Zi-Wei, Phys. Rev. C 72, (2005) 064901.

Primary author: KATRYŃSKA, Natalia (Institute of Physics Jagiellonian University)

Co-author: Prof. MAJKA, Zbigniew (Institute of Physics Jagiellonian University)

Presenter: Dr STASZEL, Pawel (Jagiellonian University)

Session Classification: IV. Heavy Ions

Track Classification: Heavy Ions