Centrality dependence of charged-particle pseudorapitiy densities for d-Au collisions at $\sqrt{s_{NN}} = 200$ GeV

H. Ito
for the **BRAHMS** collaboration.

Particle multiplicity measurements can yield valuable information concering the reaction dynamics for relativistic heavy-ion collisions, with the pseudorapidity densities expected to reflect the entropy of the system at freeze-out of the initial state. Comparisons of d-Au with Au-Au collisions at RHIC energies may provide a crucial test of saturation models[1]. We have measured charged-particle pseudorapity densities for the d-Au reaction at $\sqrt{s_{NN}} = 200$ GeV over a wide pseudorapidity range ($-4.7 < \eta < 4.7$) using several of the global detector subsystems of BRAHMS [2]. Near mid-rapidity ($-2.2 < \eta < 2$) the particle multiplicities were observed using modestly segmented Si strip detectors and plastic scintillator tiles. At more forward rapidity, arrays of Cherenkov radiators mounted to phototubes were used to determine the charged particle multiplicities, on *both* the d and Au sides of the reaction. A minimum-bias trigger was established using plastic scintillators mounted around the beam pipe at very forward rapidity. We will discuss the centrality dependence of the observed multiplicity distributions and compare the d-Au results with those obtained earlier for Au-Au collisions using the same experimental arrangement [3]. We will also compare recent model calculations to the experimental results.

[1] Dmitri Kharzeev, Eugene Levin, and Marzia Nardi, hep-ph/0212316 (2002).

[2] BRAHMS Collaboration, M. Adamczyk *et al.*, Nucl. Instrum. Meth., **A499** (2003) 437.

[3] BRAHMS Collaboration, I.G. Bearden *et al.*, PRL **88** (2002) 202301.