SLAC-PUB-8734
December 2000

BARYON STOPPING IN HIGH ENERGY COLLISIONS IN THE DPMJET-III MODEL *

J. Ranft
Department of Physics, University of Siegen, D–57068 Siegen, Germany
R. Engel
University of Delaware, Bartol Research Institute, Newark DE 19716
S. Roesler
Stanford Linear Accelerator Center, Stanford University, Stanford, California 94309

Abstract

The significant stopping of the participant nucleons in hadron-nucleus and nucleus-nucleus collisions is investigated with the Monte Carlo event generator DPMJET-III by introducing new diquark breaking diagrams. It is argued that a similar mechanism might also lead to baryon stopping in proton-proton collisions at collider and cosmic ray energies. Model results are compared to data on net-proton rapidity distributions in central nuclear collisions. In addition, extrapolations of spectrum-weighted moments and energy fractions to cosmic ray energies are given.

Presented at the International Conference on Advanced Monte Carlo for Radiation Physics, Particle Transport Simulation and Applications, Monte Carlo 2000, Lisbon (Portugal), October 23-26, 2000

* Work supported by Department of Energy contract DE-AC03-76SF00515 and DE–FG02–91ER40626