

Antiproton-Nucleus Interaction and Coulomb Effect at High Energies

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Abstract: The Coulomb effect in high energy antiproton-nucleus elastic and inelastic scattering from ^{12}C and ^{16}O is studied in the framework of Glauber multiple scattering theory for five kinetic energies ranged from 0.23 to 1.83 GeV. A microscopic shell-model nuclear wave functions, Woods-Saxon single-particle wave functions, and experimental pN amplitudes are used in the calculations. The results show that the Coulomb effect is of paramount importance for filling up the dips of differential cross sections. We claim that the present result for inelastic scattering of antiproton- ^{12}C is sufficiently reliable to be a guide for measurements in the very near future. We also believe that antiproton nucleus elastic and inelastic scattering may produce new information on both the nuclear structure and the antinucleon-nucleon interaction, in particular the p-neutron interaction.

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Key words: p-nucleus scattering, Glauber scattering theory, nuclear wave functions

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