A Prediction for Less Nuclear Shadowing in pA at High Energies

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Abstract

We predict less nuclear shadowing in pA collisions than is observed in leptonA collisions at high energies. In fact, the ratio of the cross section of pA to pp (R = \(\sigma_{pA}/(A \ast \sigma_{pp})\)) for fixed \(Q^2\) becomes flat at high energies (small \(x\)). This surprising result differs from the behavior observed in leptonA collisions where R decreases at high energies. The difference between these two systems results from the color structure of the \(g\) probe in pA compared to the \(\gamma^*\) probe in leptonA which does not have color structure.