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Full . Published Online: March 2017

Leading neutrons from polarized proton-nucleus collisions

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Neutrons . Asymmetric matters . Protons . Neutron diffraction

ABSTRACT

Leading neutron production on protons is known to be subject to strong absorptive corrections, which have been under debate for a long time. On nuclear targets these corrections are significantly enhanced and push the partial cross sections of neutron production to the very periphery of the nucleus. As a result, the A -dependences of inclusive and diffractive neutron production turn out to be similar. The mechanism of π - a_1 interference, which successfully explained the observed single-spin asymmetry of neutrons in polarized pp interactions, is extended here to polarized pA collisions. Corrected for nuclear effects it explains quite well the magnitude and sign of the asymmetry A_N observed in inelastic events, resulting in a violent break up of the nucleus. However the excessive magnitude of A_N observed in the diffractive sample remains a challenge

unreactive sample, remains a challenge.

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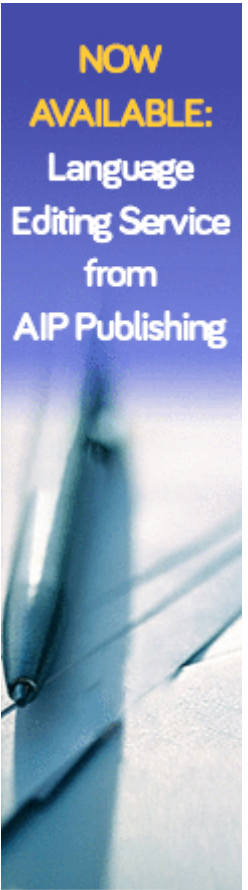
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