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Abstract for an Invited Paper for the APR21 Meeting of the American Physical Society

Ruling out Color Transparency in quasi-elastic 12 C(e,ep) up to $Q^2 = 14$ (GeV/c) 21 HOLLY SZUMILA-VANCE, Jefferson Lab

Color transparency (CT) is a fundamental phenomenon of QCD postulating that at high momentum transfer, one can preferentially measure hadrons that fluctuate to a small color neutral transverse size in the nucleus, and final state interactions within the nuclear medium are suppressed. This talk will discuss the recent quasi-elastic 12 C(e, ep) scattering measurement in Hall C at momentum transfer squared $Q^2 = 8, 9.4, 11.4$, and 14.2 (GeV/c)^2 , the highest ever achieved to date. Nuclear transparency for this reaction was extracted by comparing the measured yield to that expected from a plane-wave impulse approximation calculation without any final state interactions. The measured transparency was observed to be independent of Q^2 , ruling out the quantum chromodynamics effect of color transparency at such momentum scales. These new results impose strict constraints on models of color transparency for protons.

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