

Abstract Submitted
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“Tagging” the EMC effect with Short-Range Correlated protons

SHALEV GILAD, BARAK SCHMOOKLER, Massachusetts Institute of Technology — A linear correlation is observed between the slope of the typical EMC curve for $0.3 < x_B < 0.7$ in deep-inelastic scattering (DIS), $d[F_2(A)/F_2(d)]/dx_B$, and the per-nucleon cross section ratio of nucleus A to deuterium for $1.5 < x_B < 2$, $a_2(A/d)$, in inclusive electron scattering. $a_2(A/d)$ is associated with the number of short-range correlated (SRC) nucleon pairs in nuclei. This correlation is surprising because of the vastly different energy and distance scales of EMC and SRC. A possible explanation is that the modification of the nucleon structure-functions $F_2(A)$ in the nucleus depend on the virtuality of nucleons and is pronounced for SRC nucleons that are highly virtual. We are studying this hypothesis by tagging EMC events with high-momentum protons recoiling backward to the transferred-momentum direction, which have been shown to be spectators in scattering off their SRC partners. The DIS data off several nuclei were collected during the eg2 running period using the CLAS detector at JLab. These data are being analyzed now as part of the data mining project. We shall present preliminary results of ratios of inclusive DIS $A(e,e')X/d(e,e')X$, semi-exclusive DIS $A(e,e'p_{\text{recoil}})X/d(e,e'p_{\text{recoil}})X$ and semi-exclusive to inclusive DIS $A(e,e'p_{\text{recoil}})X/d(e,e')X$. We shall discuss these results with respect to our hypothesis that the EMC effect is related to DIS from highly virtual, SRC nucleons.

Shalev Gilad
Massachusetts Institute of Technology

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