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The EMC Effect and Short-Range Correlations

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The deep inelastic scattering cross section for scattering from bound nucleons differs from that of free nucleons. This phenomenon, first discovered 30 years ago, is known as the EMC effect and is still not fully understood. Recent analysis of world data showed that the strength of the EMC effect is linearly correlated with the relative amount of Two-Nucleon Short Range Correlated pairs (2N-SRC) in nuclei. The latter are pairs of nucleons whose wave functions overlap, giving them large relative momentum and low center of mass momentum, where high and low is relative to the Fermi momentum of the nucleus. The observed correlation indicates that the EMC effect, like 2N-SRC pairs, is related to high momentum nucleons in the nucleus. I will review studies of the EMC-SRC correlation studies, in particular the contribution of protons versus neutrons in asymmetric nuclei. Also I will present a planned experiment aimed at studying the origin of this EMC-SRC correlation.

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