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Modification of Nucleon Structure in the Nuclear Medium - Recent Insight from Jefferson Lab

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One of the primary goals of the experimental program at Jefferson Lab is to study whether or not, and to what extent, protons and neutrons (nucleons) are modified in a nucleus. Since the 1980's, it has been known that the quark distributions in a nucleus are different than in a free proton and neutron. This observation, dubbed the EMC effect, created an industry of experiments dedicated to fully quantifying this effect and looking for other signatures of nucleon modification in nuclei. Recent results from Jefferson Lab have provided unique insight into the nuclear dependence of the EMC effect, indicating that the effect depends not on atomic mass number, A, or average nuclear density. Instead, it appears to depend on the local density of nucleons probed by the electron scattering reaction. Even more surprisingly, it has been observed that the detailed nuclear dependence of the EMC effect is shared by another, seemingly minimally related quantity - the relative number of protons and neutrons to be found in a correlated pair in the nucleus. In this presentation, I will discuss the Jefferson Lab program of electron scattering measurements targeted at understanding the modification of nucleons in nuclei, elucidating the short-range structure of the nuclear wave function, and the connection between the two. Results from the completed 6 GeV program, as well as future measurements planned for execution after the completion of the JLab 12 GeV Upgrade will be discussed.