

New Measurements of the EMC Effect in Light Nuclei and at Large x

While the modification of structure functions in nuclei (the EMC Effect) has been the focus of intense experimental and theoretical study since the original discovery in 1983, the experimental emphasis has been on heavy or medium-heavy nuclei. The theoretical interpretation of the EMC Effect is far from clear; it remains difficult to disentangle the "conventional" nuclear physics effects of binding and Fermi motion from more exotic effects.

The study of the EMC Effect in light nuclei, where the detailed nuclear structure is well understood, and at large x , where effects from Fermi motion dominate, will add new insight into the underlying mechanism at work. Experiment E03-103 at Jefferson Lab measured electron scattering cross sections from nuclei ($A=3$ to 197) and the deuteron to provide new data on the EMC Effect. These measurements will greatly improve the precision of the existing data set on ^4He , provide the first measurement of the EMC Effect in ^3He for $x>0.5$, and provide precision measurements for a large range of nuclei at large x .