SRC scaling below the inclusive limit

Short Range Correlated (SRC) pairs are temporary fluctuations of two strongly interacting nucleons in close proximity. SRC pairing shifts nucleons from low-momentum nuclear shell model states to high-momentum states with momenta greater than the nuclear Fermi momentum (k_F). This high-momentum tail has a similar shape for all nuclei (scaling). One can isolate SRC contributions by measuring inclusive electron scattering cross sections in select kinematic regions, eg. large Q^2 and $x_B > x_B^{thr} \approx 1.4$. For these kinematics the scattering is off nucleons with momentum above k_F , Meson Exchange Current (MEC) effect as well as inelastic contributions are largely suppressed. The relative abundance of SRC pairs in a nucleus relative to deuterium approximately equals to the ratio of their inclusive (e,e') cross-sections in the selected quasi-elastic kinematics presented above. We extended these ratios to much lower x_B by "tagging" the inclusive scattering to identify scattering from nucleons in SRC pairs. We did this by detecting the associated knocked-out proton and requiring that the missing momentum (which is related to the initial momentum of the knocked-out proton) be greater than the Fermi momentum. By using the large acceptance Jefferson Lab CLAS spectrometer, we could detect most of the knocked-out protons.

This talk will present preliminary tagged inclusive cross-section ratios for nuclei relative to deuterium. We show, for the first time, that we can extend the scaling region and identify SRC contributions well below x_B^{thr} by requiring large Q^2 and large missing momentum.