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Anti-Shadowing Exploration Opportunities with CEBAF at 22GeV

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An upgrade of CEBAF at Jefferson Lab to around 22 GeV will open up key science that is not possible to access at 12 GeV. One kinematic regime where this is most possible is in the "middle" Bjorken x regime around 0.1, where the available momentum transfers at 12 GeV have limited or precluded several exciting measurements. Here, the long-standing mystery of anti-shadowing may now be probed for the first time in decades. The strange sea could hence be measured with minimal theoretical bias using parity-violating electron scattering. As a result, the interplay of the valence and sea regimes may be better disentangled. Also, novel tagged measurements may provide access to meson structure and the role of mesons in nuclei. All of these measurements leverage the unique luminosity and precision capabilities possible at Jefferson Lab in the EIC era. This presentation intends to identify exciting new opportunities afforded in this middle x regime via experiments that initially utilize largely existing or already-planned Hall equipment.

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