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Experimental efforts searching for the onset of Color Transparency

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Searching for the onset of Color Transparency (CT) is a vibrant experimental effort to observe hadrons in a small neutral transverse size configuration in the nucleus. The observation of the onset of CT lies at the intersections between the quark-gluon degrees of freedom and the nucleonic descriptions of nuclei. CT is fundamentally predicted by quantum chromodynamics and is expected to be observable in exclusive scattering as a reduction of final state interactions (FSI) of the point-like hadron with the nuclear medium. Experimentally, this would yield a rise in the measured transparency of the point-like hadron with increasing four-momentum transferred. The most recently published experimental effort to observe the onset of CT for protons took place in Jefferson Lab using an electron beam on a carbon target. This experiment ruled out the observation of CT for the proton up to $Q^2=14 \text{ GeV}^2$, in contrast to theory expectations. The electron beam energies at Jefferson Lab provide an ideal energy range to search for the onset of CT in other reactions including a recent photoproduction experiment in Hall D and future experiments exploring pion electroproduction and proton knockout in rescattering kinematics from deuterium. This talk will present the current experimental status of the recent experiments and opportunities in the near future measurements at Jefferson Lab.

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Primary author: SZUMILA-VANCE, Holly (Florida International University)

Presenter: SZUMILA-VANCE, Holly (Florida International University)

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