

Search for Color Transparency Effects with Vector Meson Electroproduction at Jefferson Lab

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Abstract

Studying in-medium stimulated effects requires refined experimental approaches to probe the confinement dynamics of quarks and gluons, the building blocks of atomic nuclei. Since the deeper one looks, the more perplexing the strongly interacting hadrons behave, gaining more insights into such complex systems could rely on studying intrinsic quantum chromodynamics (QCD) phenomena such as Color Transparency (CT). CT refers to the production of small-size configurations that propagate nearly undisturbed in the nuclear medium due to reduced interactions with the surrounding QCD color objects before materializing into the fully dressed hadron with its gluonic field. The newest high-momentum transfer CT experiment accumulated data in fall 2023 using the CLAS12 detector, housed in Hall B at Jefferson Lab, and various nuclear targets ranging from deuterium to tin. In this talk, I will briefly describe my Ph.D. project and summarize the ongoing efforts to extract its preliminary results.

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