

Abstract Submitted
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Studying the Short-Distance Nuclear Force at the EIC¹

MATTHEW SIEVERT, RAJU VENUGOPALAN, Brookhaven National Laboratory, GERALD MILLER, University of Washington — Exclusive vector meson production measures the gluon distribution of a hadronic target; on a composite system like the deuteron, this gluon distribution carries nonperturbative information about the distribution of nucleons and their interactions. We argue that a novel variation of this process, in which the deuteron breaks up into a back-to-back proton/neutron pair with large transverse momentum, carries new information about the short-distance interactions of nucleons. A perturbative calculation suggests that this information may be factorized and extracted from the experimental measurements, and that such a process could be uniquely accessed by the EIC. If true, this could shed new light on the role of gluons in the short-distance nuclear force, the possibility of “hidden color” configurations in nuclear structure, and the competition between quark and gluon exchange in nucleon-nucleon scattering.

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