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Jefferson Labs Pursuit of Nuclear Femtography from 12 GeV to JLEIC

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Nuclear matter is made of quarks that are bound by gluons that also bind themselves. Unlike with the more familiar atomic and molecular matter, the interactions and structures in nuclear matter are inextricably mixed up, and observed properties of nucleons and nuclei, such as mass & spin, emerge out of this complex system. In order to understand how the properties and structure of nuclear matter emerge from the dynamics of QCD, it is essential to image the gluons and quarks and their interactions (nuclear femtography). This program is initiated at the 12-GeV Upgraded Jefferson Lab, concentrating on imaging the valence-quark region. A new US- based facility, EIC or JLEIC for the design based at Jefferson Lab, with a versatile range of beam energies, polarizations, and species, as well as high luminosity, is required to precisely image the quarks and gluons and their interactions, to explore the new QCD frontier of strong color fields in nuclei to understand how matter at its most fundamental level is made. The nuclear femtography science foreseen at and the status of the EIC will be presented.