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Future Experiments of Coherent J/ψ Electro-production off ^4He

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Coherent electro-production of J/ψ on ^4He offers a unique opportunity to explore the gluonic component of its matter distribution directly. The gluonic matter form factor of ^4He can be experimentally accessed by performing a measurement of the reaction $^4\text{He}(e, e'^4\text{He})J/\psi$ where the J/ψ is reconstructed via missing mass. Such measurement requires the coincidence detection of both scattered electrons and recoiling nuclei, and novel tagging detectors will be needed to reconstruct the recoiling ^4He momentum starting at low kinetic energies. The measured differential cross sections over a wide range of t will answer critical questions regarding the gluonic structure of ^4He : Will gluonic matter clump identically and form a similar diffractive structure in the matter form factor? Will the gluonic matter have diffractive minima as its charge form factor at the same values of Q^2 , if any at all? In this talk, we will discuss the possible future experiments with a fixed target as well as similar studies at EIC.

Submitted on behalf of a Collaboration?

No

Participate in poster competition?

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