XXVIII International Workshop on Deep Inelastic Scattering and Related Subjects



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Accessing the gluonic structure of light nuclei at the Electron Ion Collider

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We show how exclusive vector meson production off light ions can be used to probe the spatial distribution of small- \boxtimes gluons in the deuteron and 3He wave functions. In particular, we demonstrate how short range repulsive nucleon-nucleon interactions affect the predicted coherent J/Psi production spectra. Fluctuations of the nucleon substructure are shown to have a significant effect on the incoherent cross section above $|t|>0.2 \text{ GeV}^2$. By explicitly performing the JIMWLK evolution, we predict the x-dependence of coherent and incoherent cross sections in the EIC energy range. Besides the increase of the average size of the nucleus with decreasing x, both the growth of the nucleons and subnucleonic hot spots are visible in the cross sections. The decreasing length scale of color charge fluctuations with decreasing \boxtimes is also present, but may not be observable for |t|<1 GeV², if subnucleonic spatial fluctuations are present.

References

H. Mäntysaari, B. Schenke, e-Print: arXiv:1910.03297, accepted for publication in Phys. Rev. C

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