

Exploring the origin of the EMC effect with electron-deuteron DIS and spectator nucleon tagging at EIC

Thursday 5 May 2022 10:00 (20 minutes)

The origin of the nuclear modifications of partonic structure at $x > 0.3$ (EMC effect) observed in DIS experiments remains one of the major open questions of nuclear physics. Inclusive nuclear DIS experiments observe only the average effect and do not provide information about the underlying nuclear interactions. Major progress can come from DIS on the deuteron with spectator nucleon tagging, where the nuclear configuration during the DIS process is fixed by the spectator momentum and the nuclear modifications can be studied differentially in the relative momentum/distance between the nucleons. We report about simulations of a systematic study of the EMC effect using deuteron DIS with spectator nucleon tagging at the EIC. The BeAGLE event generator is supplied with a minimal virtuality-dependent parametrization of the tagged EMC effect constrained by theory and inclusive nuclear DIS data. Proton and neutron spectator tagging is simulated with the EIC far-forward detectors in the present IP6 and IP8 configurations (extending earlier results reported in [1]). An analysis strategy for the tagged EMC effect is outlined (observables, separation of initial- and final-state effects), and the uncertainties and impact of the measurements is quantified.

[1] A. Jentsch, Zhoudunming Tu, C. Weiss, Phys.Rev.C 104 (2021) 6, 065205

Submitted on behalf of a Collaboration?

No

Authors: JENTSCH, Alex (Brookhaven National Laboratory, EIC, STAR); WEISS, Christian; TU, Zhoudunming

Presenter: TU, Zhoudunming

Session Classification: WG6: Future Experiments

Track Classification: WG6: Future Experiments