

Abstract Submitted
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Probing few-body nuclear dynamics via ${}^3\text{H}$ and ${}^3\text{He}$ (e, ep)pn cross-section measurements DIEN NGUYEN, MIT & JLab — We will report the first measurement of the (e, ep) three-body breakup reaction cross sections in helium-3 (${}^3\text{He}$) and tritium (${}^3\text{H}$) at large momentum transfer ($Q^2 \sim 1.9 \text{ (GeV/c)}^2$) and ($x_B > 1$) kinematics, where the cross-section should be sensitive to quasielastic (QE) scattering from single nucleons. The data cover missing momenta $40 < p_{miss} < 500 \text{ MeV/c}$ that, in the QE limit with no rescattering, equals the initial momentum of the probed nucleon. The measured cross-sections are compared with state-of-the-art ab-initio calculations. Overall good agreement, within 20%, is observed between data and calculations for the full p_{miss} range for ${}^3\text{H}$ and for $100 < p_{miss} < 350 \text{ MeV/c}$ for ${}^3\text{He}$. Including the effects of rescattering of the outgoing nucleon improves agreement with the data at $p_{miss} > 250 \text{ MeV/c}$ and suggests contributions from charge-exchange (SCX) rescattering. The isoscalar sum of ${}^3\text{He}$ plus ${}^3\text{H}$, which is largely insensitive to SCX, is described by calculations to within the accuracy of the data over the entire p_{miss} range. This validates current models of the ground state of the three-nucleon system up to very high initial nucleon momenta of 500 MeV/c.

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