

A precise extraction of the proton induced polarization in ${}^4\text{He}(e, e'\vec{p}){}^3\text{H}$

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I will present final results on the extraction of the induced polarization P_y in ${}^4\text{He}(e, e'\vec{p}){}^3\text{H}$ from experiment E03-104 at Jefferson Lab at Q^2 values of $0.8 (\text{GeV}/c)^2$ and $1.3 (\text{GeV}/c)^2$. False asymmetries complicate the extraction of P_y . Our experiment was uniquely set up to offer the same coverage in the proton acceptance in $\text{H}(e, e'\vec{p})$ as in ${}^4\text{He}(e, e'\vec{p}){}^3\text{H}$ and allow for a significant cancellation of false asymmetries in the difference. An extensive work was carried out to minimize false asymmetries. As a result we were able to reduce the experimental uncertainties in the difference of P_y (ΔP_y) extracted from ${}^4\text{He}(e, e'\vec{p}){}^3\text{H}$ and $\text{H}(e, e'\vec{p})$ by a factor of 3 compared to previous results. The greatly reduced experimental uncertainties result in an increased possible sensitivity of ΔP_y to higher order physics effects that yield a nonzero value for P_y in $\text{H}(e, e'\vec{p})$ such as two-photon-exchange effects. We put to test modern theoretical predictions by comparing our results on the induced polarization to calculations from Udias *et al.* and Schiavialla *et al.* which use different ingredients to model final state interactions.