Polarization-transfer measurement to a large-virtuality bound proton in the deuteron Supplemental Material

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Comparing the measurements to the calculation

Consistent deviations between the data and the calculation are shown in Fig. S-1. The ratio in Fig. S-1 between the data and calculation is determined event by event and averaged over the virtuality bin (note that Fig. 3 in the paper shows the calculations and data averaged separately over the virtuality bins). The data are consistently above the calculation by about 10% (a difference of 4 standard deviations).

We checked also the agreement between the calculation and the data as a function of the collinearity of the initial proton momentum and the momentum transfer. We define $\theta_{p_m q}$ as the angle between -$\vec{p}_{\rm miss}$ and $\vec{q}$. Notice that with no initial and final state intentions $\vec{p}_{\rm i} = -\vec{p}_{\rm miss}$. For large missing momenta $\vec{p}_{\rm miss}$ and $\vec{q}$ are close to be collinear (see Table 1). For low $p_{\rm miss}$, values $\theta_{p_m q}$ cover the full range.

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Figure S-2 shows the dependence of $(P_x/P_z)_{^2\mathrm{H}}/(P_x/P_z)_{\mathrm{H}}$ on $\theta_{p_m q}$. Also shown is the calculation of [1]. As seen in the figure, the deviations between the data and the calculation have no systematic dependence on $\theta_{p_m q}$.

References

References

[1] H. Arenhovel, W. Leidemann, E. L. Tomusiak, General survey of polarization observables in deuteron electrodisintegration, Eur. Phys. J. A23 (2005) 147–190. arXiv:nucl-th/0407053, doi:10.1140/epja/i2004-10061-5.

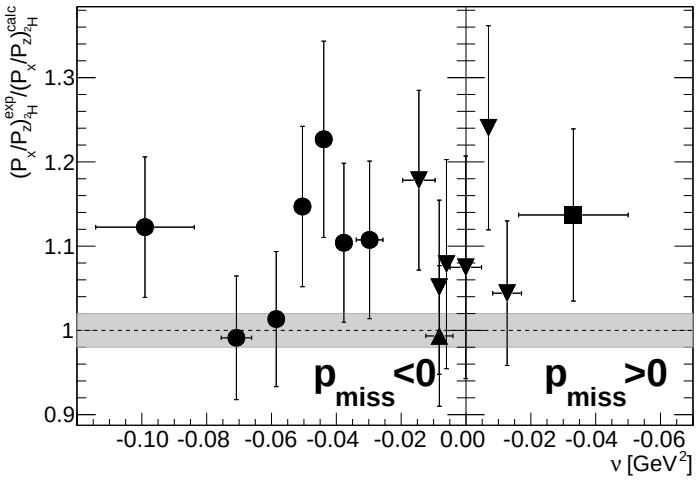

Figure S-1: The double-ratio of the measured $(P_x/P_z)^{\rm exp}_{^2{\rm H}}$ to the theoretical $(P_x/P_z)^{\rm calc}_{^2{\rm H}}$ (full calculation of [1]). The symbols refer to the different experimental set-ups defined in the legend of Fig. 2 in the paper. The gray band presents our estimate of the theoretical uncertainty (see text in the paper for details).

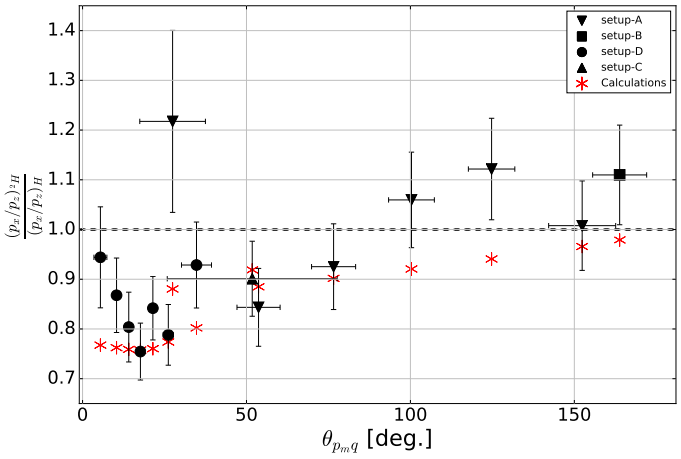

Figure S-2: The measured and calculated [1] double-ratio $(P_x/P_z)_{^2{\rm H}}/(P_x/P_z)_{\rm H}$ as a function of $\theta_{p_m q}$. Symbols are as used in Figures 2 and 3 of the paper.