

August 19, 2020

Dr. Michael Thoennessen
Editor-in-Chief, APS Editorial Office
Physical Review Letters (PRL)

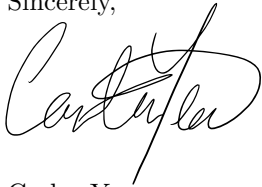
Dear Dr. Thoennessen,

I hereby submit a manuscript entitled “Probing the Deuteron at Very Large Internal Momenta” to be considered for publication by *Physical Review Letters*. There are eight files in all: the main manuscript file (ms.tex), 2 figure files (.pdf), a bibliography file (.bbl), an author list file (.tex), and three supplementary (.txt) files with the numerical results of the cross sections evaluated at the relevant kinematics described in the manuscript.

We report cross-section measurements of the $^2\text{H}(e, e'p)n$ at neutron recoil momenta up to $p_r \sim 1.0$ GeV/c which is almost double the maximum recoil momentum measured in a previous deuteron electro-disintegration experiment carried out in Hall A at Jefferson Lab. That experiment concluded that at neutron recoil angles $35^\circ \leq \theta_{nq} \leq 45^\circ$, final state interactions (FSI) are significantly smaller and the plane wave impulse approximation (PWIA) provides the dominant contribution to the cross section. This experiment focuses on the kinematic window (where FSI are small) found in Hall A and extends the neutron recoil momentum range beyond $p_r \sim 500$ MeV/c, giving direct access to the short-range structure of the deuteron. This is a crucial step forward in the understanding the nucleon-nucleon (NN) interaction at the sub-Fermi distance scale which is currently poorly understood. We believe these findings will be of general interest to the readers of your journal.

We declare that this manuscript is original, has not been published before in a peer-reviewed journal and is not currently being considered for publication elsewhere.

Sincerely,



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