

Abstract

We propose a systematic study of the ${}^2\text{H}(e, e'p)n$ reaction over a large region of the kinematic phase space. In parallel and anti-parallel kinematics, a measurement of the cross section will be made for fixed Q^2 over a large range of energy transfers extending from below to above the quasifree peak. Here the focus is on the deuteron short-range structure, as FSI are expected to be minimized for these kinematics. In perpendicular kinematics on the quasifree peak, an extraction of R_{LT} will be done at three values of Q^2 . This response function is expected to be sensitive to relativistic effects. These measurements will not only constrain models of the deuteron structure and reaction mechanisms but will also provide vital input for heavier nuclei. The JLab/Hall A combination are uniquely suited to such a study.

Hall	Description	Beam Days	Energy	Max. Current
A	${}^2\text{H}(e, e'p)n$	19	4.0 GeV	100 μA
