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HIGH-ENERGY SINGLE ARM INELASTIC e-p AND e-d SCATTERING AT 6° AND 10°

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ABSTRACT

Differential cross sections for electron scattering from hydrogen and deuterium in the deep inelastic region show that the neutron cross section is significantly smaller than the proton cross section over a large part of the kinematic region studied. Although $\nu W_2{}^d$ differs in magnitude from $\nu W_2{}^p$, it exhibits a similar scaling behavior.

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Previous studies[1,2] of proton structure by deep inelastic electron scattering have been extended to the neutron[3] in an experiment measuring cross sections for electron scattering from hydrogen and deuterium. We have measured the cross section for electrons of incident energy E scattering through an angle θ to a final energy E', for θ of 6° and 10° and for various E between 4.5 and 19.5 GeV. The data were taken at fixed values of θ and E, varying E' in discrete steps between energies corresponding to elastic e-p scattering and 2.5 GeV. These data spanned a range in squared four momentum transfer $Q^2 = 4EE' \sin^2\theta/2$ of $0.1 < Q^2 < 8.7\ \mathrm{GeV}^2$, in electron energy loss $\nu = E - E'$ of $0.1 < \nu < 17.0$ GeV, and in the mass of the unobserved final hadronic state $W = \sqrt{M^2 + 2M\nu - Q^2}$ of $M \leq W < 5.7$ GeV, where M is the proton mass. The results presented here are obtained from the subset of the data within the kinematic limits $W > 2.0$ GeV, $Q^2 > 1.0\ \mathrm{GeV}^2$ and $E' > 3.0$ GeV, except as noted.[4]

The primary electron beam from the Stanford Linear Accelerator was energy analyzed to a width $\Delta E/E = \pm 0.25\%$ ($\pm 0.1\%$ for most points at $W < 2.2$ GeV) and traversed target cells containing 7 cm of hydrogen or deuterium[5]. Two independent toroid charge monitors[6], which were calibrated against a Faraday cup at every E, measured the amount of charge incident on the target.

Scattered particles were analyzed with a double-focusing magnetic spectrometer capable of momentum analysis to 20 GeV/c. Slits limited the vertical angular acceptance to $\pm$ 4.2 mrad.

Two scintillation counter hodoscopes were used to limit the horizontal (scattering plane) angular acceptance to $\pm$ 3.7 mrad, and the momentum acceptance to $\begin{matrix} +\ 1.55\% \\ -\ 1.70\% \end{matrix}$.

Electrons were distinguished from other particles, primarily pions, by using information from a threshold Cerenkov counter and a telescope of counters constituting a lead-Lucite cascade-shower detector.

The measured electron yields were converted to differential cross sections, $d^2\sigma(E,E', \theta)/d\Omega dE'$ after corrections were made for fast electronics dead time, computer sampling dead time, electron detection and identification inefficiencies, and target density variations . These corrections had estimated errors ($\lesssim$ 1% total) which were added in quadrature to the counting errors. Yields from an empty replica target cell were measured and subtracted from the full target yields. Electron yields from π^0 decay and pair-production processes, obtained by reversing the spectrometer polarity and measuring positron yields, were also subtracted.

There are systematic experimental uncertainties which affect the absolute measured cross sections but cancel in the ratios of deuterium to hydrogen cross sections. These arise from: spectrometer solid angle and momentum acceptance ($\pm$ 2%); scattering angle ($\pm$ 0.1 mrad, or $\pm$ 1% in the cross sections); energy calibration of the incident and scattered electron beams ($\pm$ 0.2%, or $\pm$ 1% in the cross sections); calibration of the charge monitors ($\pm$ 0.5%); and counter efficiencies ($\pm$ 1%). Systematic errors which do not cancel in the ratios are: target lengths ($\pm$ 0.6%); and target densities and purities ($\pm$ 0.8%).

Radiative corrections to the measured cross sections were computed using two different procedures.[2,4,7] In both procedures the radiative tails from elastic (e-p and e-d) or quasielastic (e-d) scattering were subtracted before the remaining inelastic cross sections were corrected. We have taken the mean of the two sets of results to determine our final cross sections. The results from the two procedures differed typically from their mean by 1.5% and never by more than 3%. The hydrogen to deuterium ratios, found from the two procedures, differed by typically $\lesssim 0.5\%$. Taking into account these differences, we estimate the systematic uncertainties due to these corrections to be $\pm 5\%$ in the absolute cross sections for $E' = 3.0$ GeV, decreasing to $\pm 3\%$ for $E' > 4.0$ GeV. We estimate the systematic uncertainties in the ratios to be half those in the cross sections.

Where they overlap, the hydrogen cross sections are consistent with our previous results at SLAC[1] and results obtained at DESY and Cornell.[8]

Separate determinations of the structure functions $W_1(\nu, Q^2)$ and $W_2(\nu, Q^2)$ [9] for the proton and deuteron directly from the cross sections require data over a range of angles. This experiment alone covers too small an angular range to permit an accurate determination. Alternatively, W_2 can be expressed in terms of the cross sections, kinematic variables and $R = \sigma_s/\sigma_t$, the ratio of total absorption cross sections for longitudinal and transverse virtual photons. The most recent determination of R uses data from this experiment and a similar experiment at larger angles,[10,11] with results that are consistent with $R_p = R_d = 0.18 \pm 0.10$, and $R_n = 0.18 \pm 0.16$.[11] We use R = 0.18 to compute for the proton and deuteron

$$\nu W_2 = \frac{\nu\, d^2\sigma/d\Omega dE'}{(d\sigma/d\Omega)_{Mott}} \Big/ \left(1 + \frac{2}{1+R}\left(1+\frac{\nu^2}{Q^2}\right)\tan^2\theta/2\right)$$

Changing R by $\pm$ 0.10 changes νW_2 by at most 7% and usually by much less.

Previous experiments[1,2] showed that νW_2^p was consistent with the scaling suggestion of Bjorken,[12] i.e., that νW_2^p was a function only of $\omega = 2M\nu/Q^2$ in the limit ν and $Q^2 \to \infty$. It was also shown that scaling occurred over a larger kinematic range for νW_2^p expressed as a function of $\omega' = 1 + W^2/Q^2$ instead of ω. Our results, in Fig. 1, illustrate that νW_2^d, as well as νW_2^p, exhibit this scaling behavior. We have concluded that, within the statistical and estimated systematic errors, νW_2^d and νW_2^p are consistent with scaling in ω' at least for $W > 2$ GeV and $Q^2 > 1$ GeV^2. The scaling behavior in ω is also similar to that observed previously.[1]

The structure functions and cross sections for the free neutron were determined from those of the proton and deuteron, using an impulse approximation to correct for the effects of the Fermi motion of the nucleons in the deuteron.[10,13] We emphasize that for the data presented in this paper, these corrections are small (< 3%, averaging 1%) and that uncertainties in the corrections have correspondingly small effects. In addition, the neutron cross sections are quite insensitive to the uncertainties in the values of R_p and R_n used in their determination.

Fig. 2a shows the ratios σ_n/σ_p of free neutron to proton differential cross sections versus $x' = 1/\omega'$. The plotted points are averages of all the data in each interval of 0.02 in x'. These are identical to the ratios $\nu W_2^n/\nu W_2^p$ or W_1^n/W_1^p for $R_n = R_p$.

Fig. 2b shows the differences $\nu(W_2^p - W_2^n)$, again averaged over intervals of 0.02 in x'. The values plotted in Fig. 2a and 2b are derived from the data shown in Fig. 1 and are given in Table I. The prominent peak is in the kinematic region where R is best known experimentally and where the uncertainties due to radiative corrections are relatively small. The behavior of $\nu(W_2^p - W_2^n)$ at small x' cannot be resolved with these data.

Table 2 gives results for integrals over νW_2 interpolated to fixed Q^2 for the proton and deuteron.

$$I_1 = \int_{\omega_{min}}^{\omega_{max}} \nu W_2 \, d\omega/\omega^2 \quad , \qquad I_2 = \int_{\omega_{min}}^{\omega_{max}} \nu W_2 \, d\omega/\omega$$

These integrals include data from the entire region $M+m_\pi \leq W \leq W_{max}$ but do not include elastic (p and d) or quasielastic (d) contributions. These integrals, extended to $\omega_{max} = \infty$, appear in certain sum rules.[14]

Based on the statistical and systematic errors, the inelastic scattering of electrons from neutrons is appreciably smaller than from protons over a wide range of Q^2 and W. This suggests that a significant fraction of the deep inelastic scattering is non-diffractive in character,[15] at least for $x' > 0.1$.

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CAPTIONS

Fig. 1. νW_2^p and νW_2^d vs. ω'. Data are from the region $Q^2 > 1.0$ GeV^2, $W > 2.0$ GeV. $R_p = R_d = 0.18$. Errors shown are statistical only. In most cases the error bars are smaller than the symbols.

Fig. 2. (a) σ_n/σ_p vs. x'. For $R_p = R_d = R_n$ these points are also W_2^n/W_2^p and W_1^n/W_1^p. (b) $\nu(W_2^p - W_2^n)$ vs. x', assuming $R_p = R_d = R_n = 0.18$. The errors shown are statistical only.

Table I. Ratios σ_n/σ_p and differences $\nu(W_2^p - W_2^n)$ vs. x'. These are plotted in Fig. 2(a) and (b). The errors are statistical only.

Table II. Integrals over νW_2^p and νW_2^d. Elastic contributions are not included. Terms are defined in the text. Each entry in the Table has an estimated systematic error of 5%, which includes systematic uncertainties from interpolation and integration. The purely statistical errors are less than 1%. The systematic error in the ratio of the same integral for p and d is estimated to be 3%.

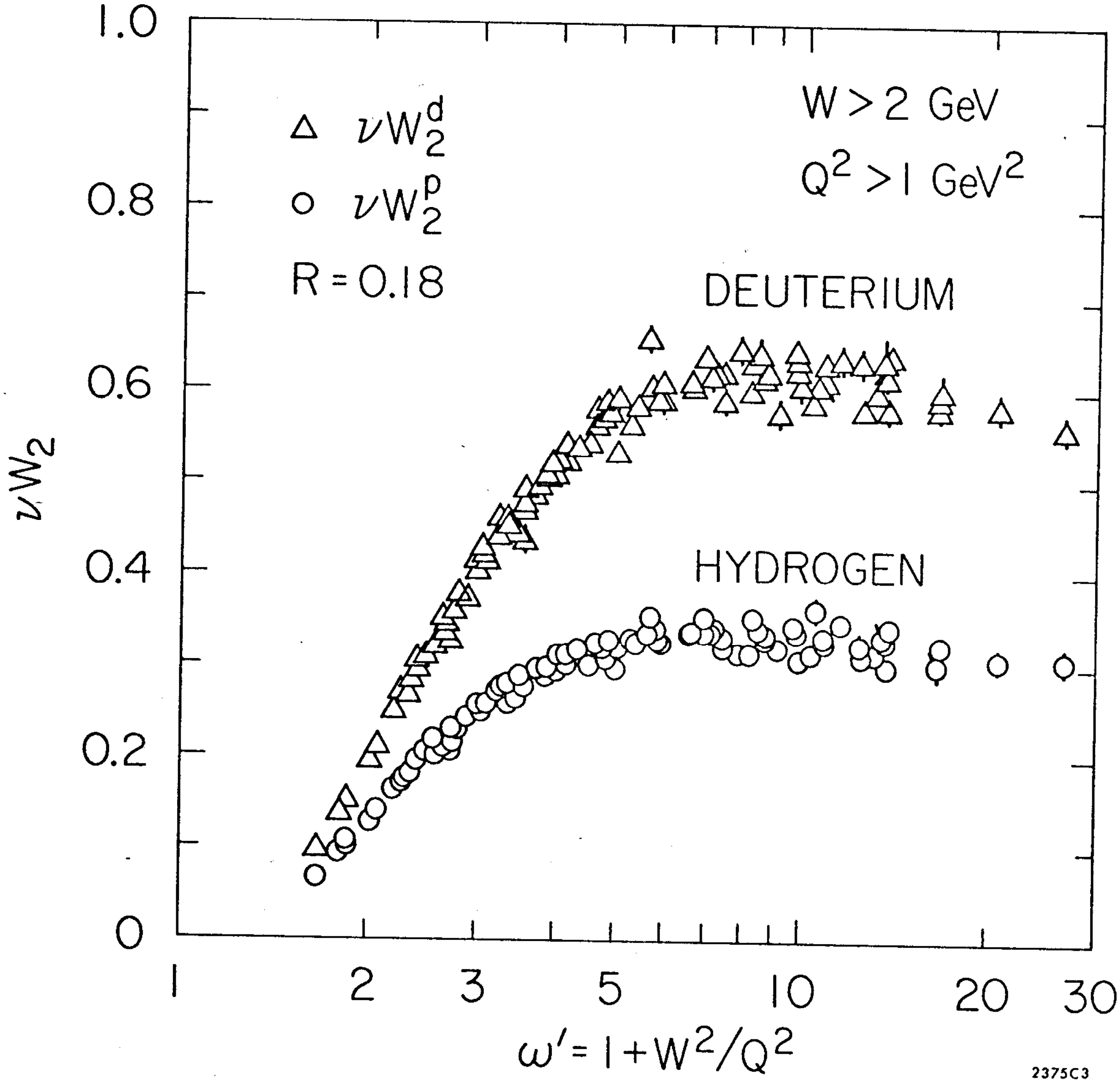
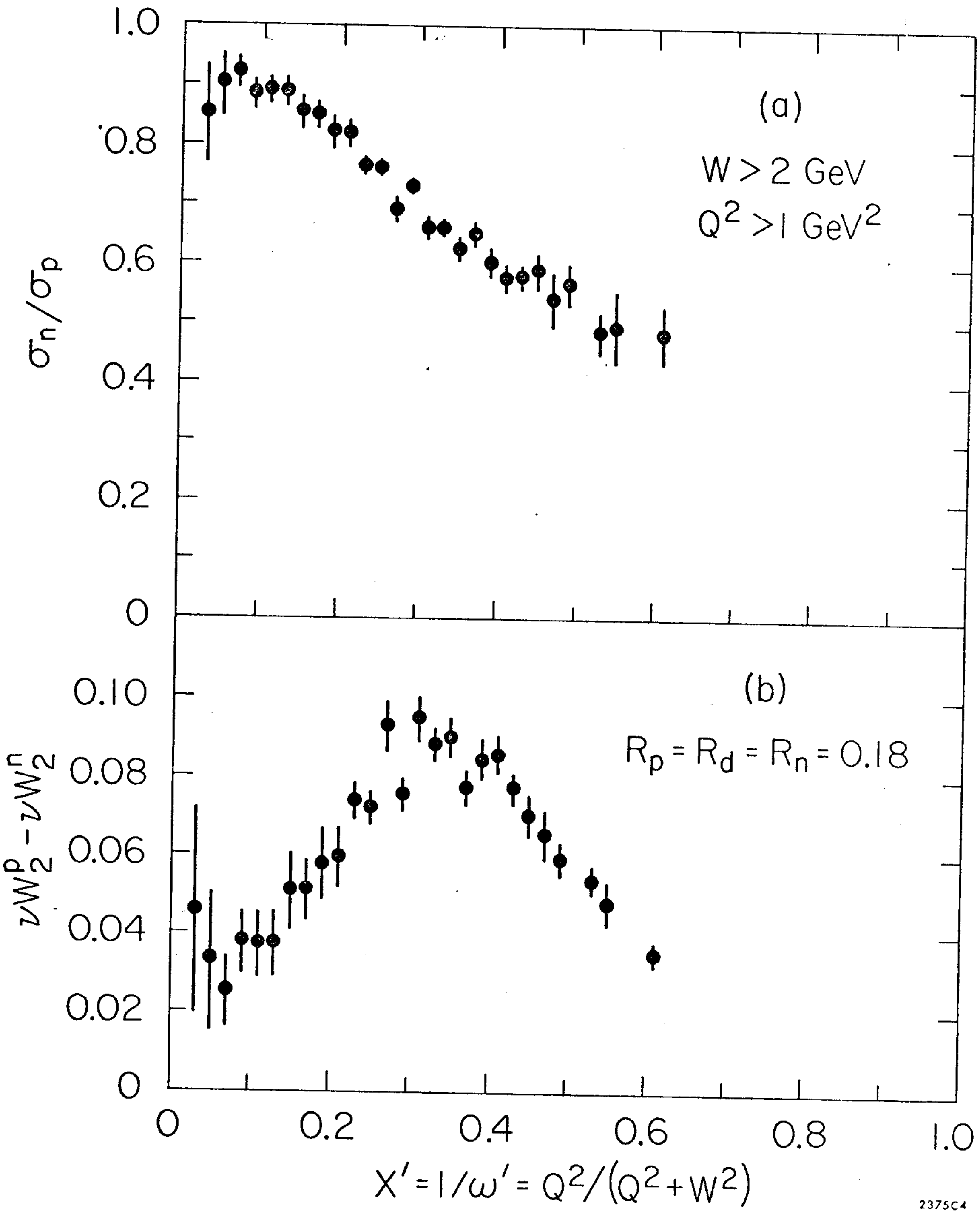

1.0
0.8
0.6
0.4
0.2
0
νW_2
$\triangle$ νW_2^d
$\circ$ νW_2^p
R = 0.18
W > 2 GeV
$Q^2 > 1$ GeV^2
DEUTERIUM
HYDROGEN
1
2
3
5
10
20
30
$\omega' = 1 + W^2/Q^2$
2375C3

FIG. 1



1.0
0.8
0.6
0.4
0.2
0
σ_n/σ_p
(a)
W > 2 GeV
$Q^2 > 1$ GeV^2
0.10
0.08
0.06
0.04
0.02
0
$\nu W_2^p - \nu W_2^n$
(b)
$R_p = R_d = R_n = 0.18$
0
0.2
0.4
0.6
0.8
1.0
$X' = 1/\omega' = Q^2/(Q^2+W^2)$
2375C4

FIG.2

TABLE I

x'	σ_n/σ_p	$\nu(W_2^p - W_2^n)$
0.030	0.853 ± 0.085	0.0456 ± 0.0263
0.050	0.898 ± 0.054	0.0328 ± 0.0176
0.070	0.920 ± 0.028	0.0252 ± 0.0089
0.090	0.884 ± 0.025	0.0378 ± 0.0082
0.110	0.890 ± 0.024	0.0369 ± 0.0082
0.130	0.887 ± 0.025	0.0372 ± 0.0084
0.150	0.853 ± 0.029	0.0510 ± 0.0099
0.170	0.848 ± 0.023	0.0510 ± 0.0078
0.190	0.819 ± 0.028	0.0576 ± 0.0091
0.210	0.818 ± 0.023	0.0594 ± 0.0075
0.230	0.763 ± 0.016	0.0739 ± 0.0049
0.250	0.760 ± 0.014	0.0722 ± 0.0043
0.270	0.690 ± 0.021	0.0927 ± 0.0064
0.290	0.731 ± 0.015	0.0754 ± 0.0042
0.310	0.660 ± 0.021	0.0945 ± 0.0057
0.330	0.661 ± 0.016	0.0880 ± 0.0042
0.350	0.625 ± 0.021	0.0900 ± 0.0050
0.370	0.649 ± 0.021	0.0772 ± 0.0046
0.390	0.602 ± 0.025	0.0844 ± 0.0053
0.410	0.574 ± 0.024	0.0858 ± 0.0048
0.430	0.577 ± 0.022	0.0770 ± 0.0041
0.450	0.586 ± 0.032	0.0700 ± 0.0054
0.470	0.539 ± 0.046	0.0654 ± 0.0065
0.490	0.564 ± 0.034	0.0594 ± 0.0047
0.530	0.482 ± 0.035	0.0540 ± 0.0036
0.550	0.492 ± 0.060	0.0481 ± 0.0057
0.610	0.480 ± 0.048	0.0350 ± 0.0032

TABLE II

$Q^2 (GeV^2)$	1.0	1.0	4.0
ω_{min}	1.27	1.27	1.07
ω_{max}	25.0	5.0	5.0
W_{max}(GeV)	5.0	2.2	4.1
I_1^p	0.163	0.113	0.106
I_1^d	0.285	0.191	0.173
I_2^p	0.809	0.309	0.294
I_2^d	1.459	0.524	0.492

APPENDIX

In this Appendix we tabulate the cross sections with $W \geq 2.0$ GeV and $E' \geq 3.0$ GeV, along with various derived quantities and kinematic variables. The raw cross sections, $d^2\sigma/d\Omega dE'$, for hydrogen and deuterium before the elastic tail subtraction or any other radiative corrections have been made are given, as well as these cross sections after all radiative corrections have been made. The neutron cross sections derived from the radiatively corrected hydrogen and deuterium cross sections are given, as well as the smearing corrections that were used. In order to make this tabulation more readily useful we have calculated νW_2 and $2MW_1$ for each radiatively corrected cross section using $R = 0.18$. We emphasize that all of the errors tabulated are the statistical errors only (or the result of the propagation of the statistical errors) and contain no contribution from any systematic errors. Various systematic effects are discussed in the text, pp.2,3.

For completeness we define here all of the symbols appearing in the Tables.

$$\left.\begin{array}{lll} E & = & \text{incident electron energy (GeV)} \\ E' & = & \text{scattered electron energy (GeV)} \\ \theta & = & \text{electron scattering angle (degree)} \end{array}\right\} \text{ all in the laboratory}$$

$$\frac{d^2\sigma}{d\Omega\, dE'} = \left(\frac{d\sigma}{d\Omega}\right)_{\text{Mott}} \left[W_2 + 2W_1 \tan^2 \frac{\theta}{2}\right]$$

$$\left(\frac{d\sigma}{d\Omega}\right)_{\text{Mott}} = \frac{e^4 \cos^2 \theta/2}{4\, E^2 \sin^4 \theta/2} = \frac{5.18384 \cos^2 \theta/2}{\left[E\ (\text{GeV})\right]^2 \sin^4 \theta/2} \qquad \left(10^{-33}\ \text{cm}^2/\text{sr}\right)$$

The cross section symbols actually appearing in the Tables are given on the right hand side of the following equation:

$$\left(\frac{d^2\sigma}{d\Omega\, dE'}\right)_i^j \pm \Delta\left(\frac{d^2\sigma}{d\Omega\, dE'}\right)_i^j = \sigma_i^j \quad \Delta\sigma_i^j \qquad \left(10^{-33}\mathrm{cm}^2/\mathrm{sr\text{-}GeV}\right)$$

i = d(euteron), p(roton), n(eutron)

j = r(aw), c(orrected)

For ease in formatting we have left out the $\pm$ signs in the Tables, and we have sometimes given an obviously inordinate number of significant figures. We hope that these simplicities will cause no confusion or aesthetic affront.

The radiative corrections depend on, among other things, the average thickness of material, in units of radiation lengths, upbeam of the center of a liquid target, and between the center of the liquid target and the spectrometer vacuum system. The values used in the radiative correction program, including the liquid in the target, as well as various foils, windows, and other material, are given in the following table.

Average Thickness (10^{-3}r.l.)

	Θ	LH_2	LD_2
Upbeam of target center	6	5.43	5.92
	10	5.49	5.66
Between target center and spectrometer	6	12.62	13.19
	10	11.77	12.33

$$Q^2 = 4EE'\sin^2\theta/2 \quad (\text{GeV}^2)$$
$$\nu = E - E' \quad (\text{GeV})$$
$$W^2 = 2M\nu + M^2 - Q^2 \quad (\text{GeV}^2)$$
$$M = 0.938256 \text{ GeV (proton mass)}$$
$$\epsilon = 1/(1 + 2\,(1 + \nu^2/Q^2)\,\tan^2\theta/2)$$

(ϵ is the relative longitudinal polarization of the virtual photon. $0 \leq \epsilon \leq 1$)

$$\omega' = 1 + W^2/Q^2$$
$$x' = 1/\omega'$$
$$\nu W_2 = \left[\frac{d\sigma/d\Omega dE'}{(d\sigma/d\Omega)_{Mott}}\right]\left[\frac{\nu\ \epsilon(1+R)}{1 + \epsilon R}\right]$$
$$2MW_1 = \left[\frac{d\sigma/d\Omega\, dE'}{(d\sigma/d\Omega)_{Mott}}\right]\left[\frac{2M\ \epsilon}{1+\epsilon R}\right]\left[\frac{Q^2+\nu^2}{Q^2}\right]$$

In the Tables the structure functions are evaluated for $R = 0.18$. For a different value of R:

$$\nu W_2(R) = \nu W_2(0.18)\left[\frac{1+R}{1.18}\right]\left[\frac{1 + 0.18\ \epsilon}{1 + R\ \epsilon}\right]$$
$$2MW_1(R) = 2MW_1(0.18)\left[\frac{1 + 0.18\ \epsilon}{1 + R\ \epsilon}\right]$$

The quantities S_p and U are related to the neutron and proton cross sections averaged over the 4-momentum distribution of the interacting nucleon in the deuteron. "Smearing" is the term usually applied to this averaging, denoted by subscript s.[10,13] Smearing only applies to the radiatively corrected cross section.

$$\sigma_p^c = S_p \sigma_{ps}$$
$$\sigma_n^c = S_n \sigma_{ns}$$
$$U = S_n/S_p$$

As a guide to the effects of possible relative systematic errors between hydrogen and deuterium cross sections note that a 1% change in the σ_d/σ_p ratio changes σ_n/σ_p by 2% if $\sigma_d/\sigma_p = 2$, and by 2.4% if $\sigma_d/\sigma_p = 1.7$.

In the Tables each kinematic point (E, E', θ; H and D targets) gives rise to three rows of numbers, the definitions of which are indicated in the Table headings. All energy quantities have units of GeV, all cross sections have units $10^{-33} cm^2/sr\text{-}GeV$, and the scattering angle is given in degrees.

E= 7.014 θ= 5.988

Kinematic Quantities			Radiatively Corrected Cross Sections		Raw Cross Sections		Structure Functions			
W	W^2	Q^2	σ_d^c	$\Delta\sigma_d^c$	σ_d^r	$\Delta\sigma_d^r$	$\nu(W_2$	$\Delta W_2)$	$2M(W_1$	$\Delta W_1)$ deuteron
S_p	E'	ϵ	σ_p^c	$\Delta\sigma_p^c$	σ_p^r	$\Delta\sigma_p^r$				proton
U	ω'	x'	σ_n^c	$\Delta\sigma_n^c$	n/p Ratio (σ_n^c/σ_p^c)	$\Delta(\sigma_n^c/\Delta_p^c)$				neutron
2.258	5.099	0.350	2719.080	46.961	3395.364	52.170	0.4329	0.0075	5.0650	0.087
1.009	4.579	0.911	1419.300	33.575	1859.532	37.589	0.2260	0.0053	2.6438	0.063
1.001	15.547	0.064	1325.574	58.132	0.934	0.057	0.2111	0.0093	2.4693	0.009
2.507	6.285	0.304	2118.492	38.007	2827.644	42.649	0.3984	0.0071	6.5481	0.117
1.010	3.972	0.853	1097.592	27.978	1566.708	31.693	0.2064	0.0053	3.3926	0.086
1.001	21.674	0.046	1043.125	47.548	0.950	0.061	0.1962	0.0089	3.2242	0.009
2.757	7.601	0.252	1661.328	31.603	2441.196	37.410	0.3475	0.0066	8.2837	0.158
1.011	3.298	0.766	864.926	23.585	1388.424	27.828	0.1809	0.0049	4.3127	0.118
1.001	31.112	0.032	815.490	39.753	0.943	0.065	0.1706	0.0083	4.0662	0.008

E= 10.027 θ= 5.988

2.024	4.097	0.859	1810.000	15.600	1822.000	14.430	0.5524	0.0048	2.6245	0.023
1.013	7.855	0.966	1050.000	14.310	1067.000	13.360	0.3205	0.0044	1.5225	0.021
1.000	5.766	0.173	783.529	21.319	0.746	0.028	0.2391	0.0065	1.1361	0.007
2.074	4.301	0.848	1759.000	13.880	1785.000	12.910	0.5608	0.0044	2.7842	0.022
1.011	7.752	0.963	1003.000	12.560	1035.000	11.860	0.3198	0.0040	1.5876	0.020
1.000	6.071	0.165	775.348	18.833	0.773	0.026	0.2472	0.0060	1.2272	0.006
2.128	4.528	0.836	1670.000	13.250	1732.000	12.450	0.5573	0.0044	2.9051	0.023
1.012	7.638	0.959	971.600	12.260	1014.000	11.600	0.3243	0.0041	1.6902	0.021
1.000	6.419	0.156	718.438	18.169	0.739	0.026	0.2398	0.0061	1.2498	0.006
2.176	4.735	0.824	1610.000	13.840	1686.000	13.100	0.5589	0.0048	3.0451	0.026
1.012	7.534	0.955	883.300	12.480	952.800	12.080	0.3066	0.0043	1.6707	0.024
1.000	6.744	0.148	746.018	18.760	0.845	0.031	0.2590	0.0065	1.4110	0.007
2.222	4.937	0.813	1576.000	12.050	1661.000	11.490	0.5676	0.0043	3.2287	0.025
1.013	7.432	0.952	866.200	10.900	934.800	10.630	0.3120	0.0039	1.7745	0.022
1.000	7.072	0.141	730.287	16.365	0.843	0.027	0.2630	0.0059	1.4961	0.006
2.268	5.144	0.802	1504.000	13.230	1608.000	12.800	0.5614	0.0049	3.3362	0.029
1.013	7.328	0.948	862.100	12.150	928.400	11.880	0.3218	0.0045	1.9123	0.027
1.000	7.415	0.135	661.451	18.090	0.767	0.029	0.2469	0.0068	1.4673	0.007
2.307	5.322	0.792	1457.000	24.530	1572.000	24.410	0.5601	0.0094	3.4563	0.058
1.013	7.238	0.944	819.800	22.110	896.000	22.280	0.3152	0.0085	1.9448	0.052
1.000	7.720	0.130	656.140	33.261	0.800	0.057	0.2522	0.0128	1.5565	0.013
2.512	6.310	0.738	1264.920	21.693	1425.276	22.032	0.5610	0.0096	4.2474	0.073
1.013	6.740	0.921	682.260	16.205	790.226	16.763	0.3026	0.0072	2.2909	0.054
1.001	9.556	0.105	599.702	27.331	0.879	0.055	0.2660	0.0121	2.0137	0.012
2.755	7.590	0.667	1050.780	18.356	1257.948	19.492	0.5376	0.0094	5.2565	0.092
1.012	6.096	0.883	573.098	12.609	703.375	13.466	0.2932	0.0065	2.8669	0.063
1.001	12.379	0.081	490.780	22.474	0.856	0.052	0.2511	0.0115	2.4551	0.011
3.010	9.060	0.586	870.381	15.264	1118.634	16.720	0.4999	0.0088	6.5070	0.114
1.012	5.356	0.827	466.696	8.510	621.829	9.615	0.2680	0.0049	3.4890	0.064
1.001	16.461	0.061	414.543	17.654	0.888	0.048	0.2381	0.0101	3.0991	0.010
3.256	10.602	0.501	761.741	13.864	1039.824	15.707	0.4695	0.0085	8.2544	0.150
1.012	4.579	0.752	391.926	9.800	574.194	11.225	0.2416	0.0060	4.2470	0.106
1.001	22.157	0.045	379.334	17.131	0.968	0.061	0.2338	0.0106	4.1106	0.011
3.506	12.292	0.408	706.961	11.603	1041.816	13.496	0.4428	0.0073	10.9847	0.180
1.012	3.728	0.650	354.377	10.020	578.975	11.932	0.2220	0.0063	5.5063	0.156
1.001	31.132	0.032	361.428	15.452	1.020	0.066	0.2264	0.0097	5.6158	0.010

E = 13.549 θ = 5.988

Kinematic Quantities: W / S_p / U	W^2 / E' / ω'	Q^2 / ϵ / x'	Radiatively Corrected Cross Sections: σ_d^c / σ_p^c / σ_n^c	$\Delta\sigma_d^c$ / $\Delta\sigma_p^c$ / $\Delta\sigma_n^c$	Raw Cross Sections: σ_d^r / σ_p^r / n/p Ratio (σ_n^c/σ_p^c)	$\Delta\sigma_d^r$ / $\Delta\sigma_p^r$ / $\Delta(\sigma_n^c/\Delta_p^c)$	Structure Functions (deuteron / proton / neutron): $\nu(W_2$	$\Delta W_2)$	$2M(W_1$	$\Delta W_1)$
2.029	4.117	1.621	724.700	5.906	658.900	5.052	0.4842	0.0039	1.5274	0.012
1.021	10.961	0.973	421.400	5.204	391.700	4.552	0.2816	0.0035	0.8882	0.011
0.999	3.540	0.282	318.200	7.957	0.755	0.026	0.2126	0.0053	0.6706	0.005
2.081	4.331	1.605	712.300	5.562	654.800	4.796	0.4945	0.0039	1.6118	0.013
1.019	10.855	0.971	430.500	5.042	398.800	4.400	0.2989	0.0035	0.9741	0.011
0.999	3.698	0.270	295.038	7.578	0.685	0.024	0.2048	0.0053	0.6676	0.005
2.128	4.528	1.591	720.400	5.971	666.600	5.181	0.5174	0.0043	1.7388	0.014
1.019	10.757	0.969	406.500	5.275	386.200	4.699	0.2919	0.0038	0.9811	0.013
0.999	3.847	0.260	327.259	8.045	0.805	0.028	0.2350	0.0058	0.7899	0.006
2.175	4.731	1.576	695.300	5.337	655.400	4.683	0.5163	0.0040	1.7905	0.014
1.019	10.657	0.967	402.300	4.887	385.600	4.369	0.2987	0.0036	1.0360	0.013
0.999	4.002	0.250	305.904	7.304	0.760	0.025	0.2271	0.0054	0.7877	0.005
2.224	4.946	1.560	690.400	5.508	653.900	4.870	0.5304	0.0042	1.9024	0.015
1.020	10.551	0.964	398.100	5.016	383.400	4.521	0.3058	0.0039	1.0969	0.014
0.999	4.171	0.240	305.802	7.524	0.768	0.026	0.2349	0.0058	0.8426	0.006
2.269	5.148	1.545	689.500	5.485	658.800	4.871	0.5463	0.0043	2.0220	0.016
1.020	10.451	0.962	408.200	5.023	392.300	4.510	0.3234	0.0040	1.1971	0.015
0.999	4.332	0.231	294.794	7.511	0.722	0.025	0.2335	0.0060	0.8645	0.006
2.319	5.378	1.528	675.800	7.959	653.600	7.180	0.5537	0.0065	2.1240	0.025
1.020	10.338	0.959	375.600	7.021	372.200	6.480	0.3077	0.0058	1.1805	0.022
1.000	4.518	0.221	313.716	10.733	0.835	0.041	0.2570	0.0088	0.9860	0.009
2.527	6.386	1.455	631.464	10.587	631.862	9.990	0.5904	0.0099	2.6468	0.044
1.018	9.840	0.946	352.385	7.943	357.763	7.609	0.3295	0.0074	1.4770	0.033
1.000	5.389	0.186	290.445	13.389	0.824	0.051	0.2716	0.0125	1.2174	0.013
2.767	7.656	1.362	570.011	10.607	599.492	10.418	0.6113	0.0114	3.3197	0.062
1.016	9.212	0.925	317.923	7.790	340.333	7.804	0.3410	0.0084	1.8515	0.045
1.000	6.621	0.151	261.208	13.298	0.822	0.056	0.2801	0.0143	1.5212	0.014
3.013	9.078	1.258	499.198	9.506	556.725	9.778	0.6054	0.0115	4.0467	0.077
1.015	8.510	0.896	262.709	6.670	300.296	7.000	0.3186	0.0081	2.1296	0.054
1.000	8.215	0.122	243.976	11.730	0.929	0.061	0.2959	0.0142	1.9778	0.014
3.265	10.660	1.143	440.474	8.460	515.050	9.040	0.5933	0.0114	4.9681	0.095
1.014	7.728	0.856	236.787	4.320	283.048	4.560	0.3189	0.0058	2.6707	0.049
1.001	10.329	0.097	210.063	9.614	0.887	0.050	0.2829	0.0129	2.3693	0.013
3.512	12.334	1.020	414.552	8.278	507.074	8.994	0.6042	0.0121	6.4040	0.128
1.013	6.901	0.805	220.138	5.829	273.676	6.355	0.3208	0.0085	3.4007	0.090
1.001	13.088	0.076	200.004	10.223	0.909	0.063	0.2915	0.0149	3.0896	0.015
3.764	14.168	0.886	372.978	7.892	485.040	8.798	0.5714	0.0121	7.8627	0.166
1.012	5.996	0.737	205.282	5.769	272.779	6.453	0.3145	0.0088	4.3275	0.122
1.001	16.982	0.059	172.343	9.862	0.840	0.065	0.2640	0.0151	3.6331	0.015
4.012	16.096	0.746	352.041	7.591	496.007	8.806	0.5441	0.0117	9.9720	0.215
1.012	5.043	0.651	178.862	4.248	264.703	4.819	0.2764	0.0066	5.0665	0.120
1.001	22.587	0.044	177.580	8.787	0.993	0.064	0.2745	0.0136	5.0302	0.014
4.210	17.724	0.627	324.995	8.371	496.107	10.119	0.4859	0.0125	11.5605	0.298
1.012	4.239	0.567	175.296	6.360	283.362	7.503	0.2621	0.0095	6.2355	0.226
1.001	29.280	0.034	153.752	10.604	0.877	0.084	0.2299	0.0159	5.4691	0.016
4.411	19.457	0.500	336.548	8.422	566.823	10.378	0.4607	0.0115	14.9632	0.374
1.012	3.383	0.468	178.981	7.544	329.477	9.284	0.2450	0.0103	7.9576	0.335
1.001	39.900	0.025	161.767	11.394	0.904	0.093	0.2214	0.0156	7.1923	0.016

E= 16.075 θ= 5.988

Kinematic Quantities W S_p U	 W^2 E' ω'	 Q^2 ϵ x'	Radiatively Corrected Cross Sections σ_d^c σ_p^c σ_n^c	 $\Delta\sigma_d^c$ $\Delta\sigma_p^c$ $\Delta\sigma_n^c$	Raw Cross Sections σ_d^r σ_p^r n/p Ratio (σ_n^c/σ_p^c)	 $\Delta\sigma_d^r$ $\Delta\sigma_p^r$ $\Delta(\sigma_n^c/\Delta_p^c)$	Structure Functions $\nu(W_2$	 $\Delta W_2)$	deuteron / proton / neutron $2M(W_1$	 $\Delta W_1)$
2.025	4.101	2.303	361.200	4.174	313.400	3.459	0.3870	0.0045	0.9955	0.012
1.025	13.131	0.975	221.400	3.984	193.300	3.347	0.2372	0.0043	0.6102	0.011
0.997	2.780	0.360	148.383	5.829	0.670	0.036	0.1590	0.0062	0.4090	0.006
2.072	4.293	2.287	343.000	3.433	305.000	2.909	0.3787	0.0038	0.9982	0.010
1.023	13.038	0.973	222.800	3.397	196.300	2.876	0.2460	0.0038	0.6484	0.010
0.998	2.877	0.348	127.832	4.876	0.574	0.029	0.1412	0.0054	0.3720	0.005
2.127	4.524	2.267	360.000	4.104	318.600	3.458	0.4116	0.0047	1.1172	0.013
1.023	12.925	0.971	229.300	3.712	202.900	3.147	0.2622	0.0042	0.7116	0.012
0.998	2.995	0.334	138.702	5.593	0.605	0.032	0.1586	0.0064	0.4304	0.006
2.172	4.718	2.251	360.500	3.607	322.700	3.077	0.4239	0.0042	1.1796	0.012
1.023	12.831	0.970	222.900	3.091	201.600	2.670	0.2621	0.0036	0.7294	0.010
0.998	3.096	0.323	145.599	4.804	0.653	0.028	0.1712	0.0056	0.4764	0.006
2.230	4.973	2.229	365.500	3.466	329.800	2.968	0.4455	0.0042	1.2810	0.012
1.024	12.706	0.968	227.100	2.784	205.600	2.401	0.2768	0.0034	0.7959	0.010
0.998	3.231	0.309	146.877	4.502	0.647	0.025	0.1790	0.0055	0.5148	0.005
2.274	5.171	2.212	370.300	4.733	336.300	4.085	0.4636	0.0059	1.3676	0.017
1.024	12.610	0.966	226.300	3.754	207.600	3.270	0.2833	0.0047	0.8358	0.014
0.998	3.338	0.300	152.581	6.118	0.674	0.035	0.1910	0.0077	0.5635	0.008
2.321	5.387	2.193	359.700	4.797	332.700	4.197	0.4632	0.0062	1.4052	0.019
1.024	12.504	0.964	210.600	3.697	197.800	3.270	0.2712	0.0048	0.8228	0.014
0.999	3.456	0.289	157.575	6.142	0.748	0.039	0.2029	0.0079	0.6156	0.008
2.357	5.555	2.179	332.600	11.200	315.600	10.200	0.4375	0.0147	1.3567	0.046
1.024	12.422	0.962	216.300	9.369	203.900	8.465	0.2845	0.0123	0.8823	0.038
0.999	3.549	0.282	124.158	14.794	0.574	0.086	0.1633	0.0195	0.5064	0.019
2.527	6.386	2.108	363.440	4.236	343.919	3.821	0.5270	0.0061	1.8196	0.021
1.022	12.018	0.954	217.427	2.887	207.606	2.612	0.3153	0.0042	1.0886	0.014
0.999	4.029	0.248	153.855	5.199	0.708	0.030	0.2231	0.0075	0.7703	0.008
2.777	7.712	1.995	355.273	4.054	350.393	3.742	0.5886	0.0067	2.4063	0.027
1.020	11.371	0.938	200.296	4.366	201.790	4.220	0.3319	0.0072	1.3566	0.030
1.000	4.866	0.206	162.083	6.014	0.809	0.045	0.2686	0.0100	1.0978	0.010
3.027	9.163	1.871	328.481	5.387	340.632	5.233	0.6138	0.0101	3.0036	0.049
1.018	10.664	0.917	176.093	4.003	186.650	4.007	0.3290	0.0075	1.6102	0.037
1.000	5.898	0.170	158.300	6.790	0.899	0.053	0.2958	0.0127	1.4475	0.013
3.276	10.732	1.737	300.994	5.041	327.714	5.087	0.6250	0.0105	3.6953	0.062
1.016	9.899	0.888	165.103	3.720	182.949	3.802	0.3428	0.0077	2.0270	0.046
1.000	7.180	0.139	140.707	6.330	0.852	0.052	0.2922	0.0131	1.7275	0.013
3.515	12.355	1.598	277.260	5.191	314.853	5.400	0.6273	0.0117	4.4928	0.084
1.015	9.109	0.853	148.553	3.770	172.182	4.069	0.3361	0.0085	2.4072	0.061
1.001	8.733	0.115	133.004	6.485	0.895	0.060	0.3009	0.0147	2.1552	0.015
3.764	14.168	1.443	262.311	5.006	310.865	5.349	0.6369	0.0122	5.6397	0.108
1.014	8.225	0.807	137.187	3.515	166.698	3.831	0.3331	0.0085	2.9495	0.076
1.001	10.819	0.092	128.924	6.181	0.940	0.062	0.3131	0.0150	2.7719	0.015
4.012	16.096	1.278	244.763	4.801	307.674	5.407	0.6229	0.0122	6.9253	0.136
1.013	7.285	0.748	129.710	3.335	168.294	3.765	0.3301	0.0085	3.6700	0.094
1.001	13.595	0.074	118.354	5.903	0.912	0.062	0.3012	0.0150	3.3487	0.015
4.210	17.724	1.139	227.216	3.498	303.387	3.924	0.5876	0.0090	7.9608	0.123
1.012	6.492	0.691	118.643	3.354	164.006	3.919	0.3068	0.0087	4.1568	0.118
1.001	16.564	0.060	111.411	4.882	0.939	0.062	0.2881	0.0126	3.9034	0.013
4.413	19.475	0.989	214.056	5.428	304.783	6.528	0.5485	0.0139	9.2861	0.235
1.012	5.639	0.622	116.848	3.593	172.780	4.367	0.2994	0.0092	5.0691	0.156
1.001	20.688	0.048	99.876	6.570	0.855	0.074	0.2559	0.0168	4.3328	0.017
4.614	21.289	0.834	219.917	5.497	336.349	6.649	0.5394	0.0135	11.7180	0.293
1.012	4.755	0.542	119.719	3.923	192.029	4.851	0.2936	0.0096	6.3791	0.209
1.001	26.525	0.038	102.939	6.814	0.860	0.077	0.2525	0.0167	5.4850	0.017
4.812	23.155	0.674	222.407	6.694	369.516	8.530	0.4978	0.0150	14.4179	0.434
1.012	3.845	0.451	121.711	5.132	219.718	6.459	0.2724	0.0115	7.8901	0.333
1.001	35.330	0.028	103.468	8.508	0.850	0.096	0.2316	0.0190	6.7074	0.019
4.960	24.602	0.551	250.394	8.654	455.172	11.325	0.4994	0.0173	18.7078	0.647
1.012	3.140	0.375	137.946	6.490	279.179	8.302	0.2751	0.0129	10.3064	0.485
1.001	45.660	0.022	115.568	10.912	0.838	0.107	0.2305	0.0218	8.6345	0.022

E= 19.544 θ= 5.988

Kinematic Quantities			Radiatively Corrected Cross Sections		Raw Cross Sections		Structure Functions			
W	W^2	Q^2	σ_d^c	$\Delta\sigma_d^c$	σ_d^r	$\Delta\sigma_d^r$	$\nu(W_2$	$\Delta W_2)$	$2M(W_1$	$\Delta W_1)$ deuteron
S_p	E'	ϵ	σ_p^c	$\Delta\sigma_p^c$	σ_p^r	$\Delta\sigma_p^r$				proton
U	ω'	x'	σ_n^c	$\Delta\sigma_n^c$	n/p Ratio (σ_n^c/σ_p^c)	$\Delta(\sigma_n^c/\Delta_p^c)$				neutron
2.028	4.113	3.413	132.700	2.077	109.000	1.631	0.2529	0.0040	0.5310	0.008
1.028	16.003	0.975	86.990	1.896	71.800	1.505	0.1658	0.0036	0.3481	0.008
0.995	2.205	0.454	49.178	2.841	0.565	0.042	0.0937	0.0054	0.1968	0.005
2.075	4.306	3.393	140.700	2.518	116.000	1.980	0.2749	0.0049	0.5885	0.011
1.025	15.910	0.974	89.080	2.230	74.560	1.788	0.1740	0.0044	0.3726	0.009
0.995	2.269	0.441	54.862	3.394	0.616	0.050	0.1072	0.0066	0.2295	0.007
2.117	4.482	3.375	136.900	1.934	116.000	1.553	0.2734	0.0039	0.5959	0.008
1.025	15.826	0.973	91.830	1.766	77.540	1.426	0.1834	0.0035	0.3997	0.008
0.996	2.328	0.430	48.298	2.644	0.526	0.036	0.0965	0.0053	0.2102	0.005
2.170	4.709	3.352	151.200	2.407	126.300	1.915	0.3104	0.0049	0.6926	0.011
1.026	15.717	0.971	97.350	2.109	82.270	1.705	0.1999	0.0043	0.4459	0.010
0.996	2.405	0.416	57.550	3.235	0.591	0.043	0.1182	0.0066	0.2636	0.007
2.219	4.924	3.330	149.100	2.093	127.600	1.694	0.3140	0.0044	0.7162	0.010
1.027	15.614	0.970	98.320	1.816	84.310	1.484	0.2070	0.0038	0.4723	0.009
0.996	2.479	0.403	54.586	2.803	0.555	0.036	0.1149	0.0059	0.2622	0.006
2.266	5.135	3.309	150.500	2.600	130.500	2.133	0.3247	0.0056	0.7570	0.013
1.028	15.514	0.969	102.700	2.258	88.290	1.853	0.2215	0.0049	0.5166	0.011
0.997	2.552	0.392	51.858	3.488	0.505	0.042	0.1119	0.0075	0.2608	0.008
2.322	5.392	3.282	156.400	2.743	136.300	2.254	0.3471	0.0061	0.8314	0.015
1.028	15.391	0.967	98.940	2.241	87.710	1.880	0.2196	0.0050	0.5260	0.012
0.997	2.643	0.378	61.654	3.591	0.623	0.046	0.1368	0.0080	0.3278	0.008
2.367	5.603	3.261	147.100	6.989	129.500	5.818	0.3340	0.0159	0.8178	0.039
1.028	15.290	0.965	91.910	5.724	83.460	4.901	0.2087	0.0130	0.5110	0.032
0.997	2.718	0.368	59.131	9.159	0.643	0.128	0.1343	0.0208	0.3287	0.021
2.514	6.320	3.188	170.914	2.820	152.189	2.423	0.4173	0.0069	1.1016	0.018
1.027	14.946	0.960	105.377	2.228	95.088	1.946	0.2573	0.0054	0.6792	0.014
0.998	2.983	0.335	70.011	3.646	0.664	0.045	0.1710	0.0089	0.4513	0.009
2.764	7.640	3.053	177.985	2.909	165.436	2.575	0.4892	0.0080	1.4813	0.024
1.024	14.315	0.948	105.775	2.284	99.799	2.056	0.2907	0.0063	0.8803	0.019
0.999	3.502	0.286	76.405	3.750	0.722	0.047	0.2100	0.0103	0.6359	0.010
3.018	9.108	2.903	176.790	2.995	171.412	2.766	0.5436	0.0092	1.9121	0.032
1.022	13.612	0.933	102.289	2.267	100.795	2.123	0.3145	0.0070	1.1063	0.025
0.999	4.137	0.242	78.312	3.805	0.766	0.049	0.2408	0.0117	0.8470	0.012
3.263	10.647	2.746	171.710	2.967	173.503	2.816	0.5832	0.0101	2.3910	0.041
1.020	12.876	0.914	96.492	2.257	99.002	2.171	0.3277	0.0077	1.3436	0.031
1.000	4.877	0.205	78.652	3.775	0.815	0.053	0.2671	0.0128	1.0952	0.013
3.512	12.334	2.574	163.543	2.863	171.710	2.788	0.6082	0.0106	2.9386	0.051
1.018	12.069	0.889	92.409	2.230	98.435	2.201	0.3437	0.0083	1.6604	0.040
1.000	5.792	0.173	74.078	3.669	0.802	0.054	0.2755	0.0136	1.3311	0.014
3.764	14.168	2.387	160.218	2.841	175.372	2.855	0.6454	0.0114	3.7150	0.066
1.016	11.191	0.858	88.384	2.168	97.806	2.209	0.3561	0.0087	2.0494	0.050
1.000	6.936	0.144	74.397	3.611	0.842	0.056	0.2997	0.0145	1.7251	0.015
4.009	16.072	2.192	149.351	2.748	170.587	2.820	0.6414	0.0118	4.4204	0.081
1.015	10.280	0.820	83.319	1.781	96.699	1.828	0.3578	0.0076	2.4661	0.053
1.001	8.331	0.120	68.340	3.312	0.820	0.051	0.2935	0.0142	2.0227	0.014
4.215	17.766	2.020	144.366	2.798	170.985	2.936	0.6462	0.0125	5.2287	0.101
1.014	9.469	0.781	76.929	1.958	92.871	2.082	0.3444	0.0088	2.7862	0.071
1.001	9.797	0.102	69.528	3.450	0.904	0.061	0.3112	0.0154	2.5182	0.015
4.410	19.448	1.848	140.078	2.887	171.683	3.087	0.6438	0.0133	6.1223	0.126
1.014	8.664	0.738	76.759	1.936	96.191	2.148	0.3528	0.0089	3.3549	0.085
1.001	11.525	0.087	65.346	3.514	0.851	0.060	0.3003	0.0161	2.8560	0.016
4.613	21.280	1.661	139.281	2.981	179.061	3.273	0.6476	0.0139	7.3765	0.158
1.013	7.788	0.685	74.625	2.060	98.394	2.282	0.3470	0.0096	3.9523	0.109
1.001	13.812	0.072	66.532	3.659	0.892	0.066	0.3093	0.0170	3.5236	0.017
4.808	23.117	1.473	133.199	3.075	181.155	3.478	0.6141	0.0142	8.4519	0.195
1.013	6.909	0.626	71.565	2.201	100.896	2.505	0.3300	0.0101	4.5410	0.140
1.001	16.689	0.060	63.429	3.818	0.886	0.073	0.2924	0.0176	4.0248	0.018
5.010	25.100	1.271	133.199	3.357	193.318	3.984	0.5930	0.0149	10.1486	0.256
1.012	5.960	0.556	70.498	2.462	106.978	2.916	0.3139	0.0110	5.3713	0.188
1.001	20.747	0.048	64.364	4.199	0.913	0.082	0.2866	0.0187	4.9039	0.019
5.211	27.155	1.061	136.751	3.354	216.530	4.018	0.5671	0.0139	12.4395	0.305
1.012	4.977	0.476	74.730	2.881	124.500	3.439	0.3099	0.0119	6.7978	0.262
1.001	26.584	0.038	63.725	4.456	0.853	0.085	0.2643	0.0185	5.7968	0.018
5.411	29.279	0.845	141.034	3.914	250.793	4.692	0.5170	0.0143	15.2219	0.422
1.012	3.960	0.388	79.730	3.647	152.986	4.662	0.2923	0.0134	8.6053	0.394
1.001	35.666	0.028	63.059	5.390	0.791	0.096	0.2311	0.0198	6.8060	0.020
5.558	30.891	0.680	152.587	5.151	304.577	6.889	0.4852	0.0164	18.6042	0.628
1.012	3.189	0.317	86.393	5.102	192.925	6.588	0.2747	0.0162	10.5335	0.622
1.001	46.426	0.022	68.093	7.301	0.788	0.122	0.2165	0.0232	8.3022	0.023

E = 7.019 θ = 10.000

Kinematic Quantities			Radiatively Corrected Cross Sections		Raw Cross Sections		Structure Functions			
W	W^2	Q^2	σ_d^c	$\Delta\sigma_d^c$	σ_d^r	$\Delta\sigma_d^r$	$\nu(W_2$	$\Delta W_2)$	$2M(W_1$	$\Delta W_1)$ — deuteron
S_p	E'	ϵ	σ_p^c	$\Delta\sigma_p^c$	σ_p^r	$\Delta\sigma_p^r$				proton
U	ω'	x'	σ_n^c	$\Delta\sigma_n^c$	n/p Ratio (σ_n^c/σ_p^c)	$\Delta(\sigma_n^c/\Delta_p^c)$				neutron
2.019	4.076	1.018	470.500	7.831	481.700	7.361	0.5420	0.0090	2.2851	0.038
1.015	4.773	0.916	261.500	5.687	276.100	5.443	0.3012	0.0066	1.2700	0.028
1.000	5.004	0.200	210.057	9.773	0.826	0.050	0.2489	0.0113	1.0493	0.011
2.260	5.108	0.913	423.076	7.648	460.139	7.755	0.5719	0.0103	3.0616	0.055
1.014	4.280	0.876	234.166	5.212	259.840	5.361	0.3166	0.0070	1.6945	0.038
1.000	6.596	0.152	194.834	9.344	0.832	0.053	0.2634	0.0126	1.4099	0.013
2.508	6.290	0.792	373.126	6.885	436.063	7.333	0.5717	0.0105	4.0687	0.075
1.014	3.714	0.815	198.401	4.521	239.760	4.884	0.3040	0.0069	2.1634	0.049
1.001	8.941	0.112	180.129	8.326	0.908	0.056	0.2760	0.0128	1.9642	0.013
2.758	7.607	0.658	322.877	6.348	413.286	7.016	0.5325	0.0105	5.2815	0.104
1.013	3.084	0.727	167.233	4.098	225.274	4.680	0.2758	0.0068	2.7355	0.067
1.001	12.565	0.080	160.001	7.633	0.957	0.062	0.2639	0.0126	2.6172	0.013

E = 9.022 θ = 10.000

2.027	4.109	1.746	203.800	5.613	192.400	4.841	0.4631	0.0128	1.3957	0.038
1.021	6.371	0.929	114.200	4.120	111.600	3.692	0.2595	0.0094	0.7821	0.028
0.999	3.353	0.298	93.786	7.051	0.821	0.083	0.2131	0.0160	0.6423	0.016
2.063	4.256	1.728	193.200	6.623	188.300	5.838	0.4489	0.0154	1.3863	0.048
1.020	6.302	0.925	117.100	5.105	115.300	4.584	0.2721	0.0119	0.8402	0.037
0.999	3.463	0.289	79.884	8.459	0.682	0.093	0.1856	0.0197	0.5732	0.020
2.505	6.275	1.470	193.606	4.313	203.296	4.081	0.5717	0.0127	2.5106	0.056
1.019	5.364	0.866	112.687	3.174	119.380	3.029	0.3328	0.0094	1.4613	0.041
1.000	5.268	0.190	84.597	5.421	0.751	0.063	0.2498	0.0160	1.0970	0.016
3.009	9.054	1.116	168.132	4.554	200.699	4.857	0.5855	0.0159	4.3181	0.117
1.014	4.071	0.740	93.257	3.154	114.385	3.406	0.3248	0.0110	2.3951	0.081
1.001	9.112	0.110	77.306	5.598	0.829	0.079	0.2692	0.0195	1.9855	0.019

$E = 10.998$ $\theta = 10.000$

Kinematic Quantities			Radiatively Corrected Cross Sections		Raw Cross Sections		Structure Functions			
W	W^2	Q^2	σ_d^c	$\Delta\sigma_d^c$	σ_d^r	$\Delta\sigma_d^r$	$\nu(W_2$	$\Delta W_2)$	$2M(W_1$	$\Delta W_1)$
							deuteron			
S_p	E'	ϵ	σ_p^c	$\Delta\sigma_p^c$	σ_p^r	$\Delta\sigma_p^r$	proton			
					n/p Ratio					
U	ω'	x'	σ_n^c	$\Delta\sigma_n^c$	(σ_n^c/σ_p^c)	$\Delta(\sigma_n^c/\Delta_p^c)$	neutron			
2.030	4.121	2.630	82.510	1.295	74.190	1.100	0.3300	0.0052	0.7920	0.012
1.026	7.870	0.933	51.490	0.848	46.670	0.724	0.2059	0.0034	0.4942	0.008
0.997	2.567	0.390	33.066	1.572	0.642	0.037	0.1322	0.0063	0.3174	0.006
2.074	4.301	2.602	84.290	1.443	76.500	1.232	0.3449	0.0059	0.8474	0.015
1.024	7.788	0.929	51.980	0.929	47.900	0.805	0.2127	0.0038	0.5225	0.009
0.997	2.653	0.377	34.230	1.740	0.659	0.041	0.1401	0.0071	0.3441	0.007
2.118	4.486	2.575	88.170	2.247	80.300	1.934	0.3690	0.0094	0.9288	0.024
1.024	7.705	0.926	52.670	1.425	48.900	1.242	0.2204	0.0060	0.5548	0.015
0.997	2.742	0.365	37.503	2.698	0.712	0.064	0.1570	0.0113	0.3951	0.011
2.259	5.103	2.481	95.295	1.667	88.731	1.503	0.4278	0.0075	1.1699	0.020
1.025	7.425	0.914	56.483	1.245	53.297	1.132	0.2536	0.0056	0.6934	0.015
0.998	3.057	0.327	41.111	2.110	0.728	0.049	0.1845	0.0095	0.5047	0.009
2.510	6.300	2.300	99.450	1.768	97.612	1.656	0.5008	0.0089	1.6178	0.029
1.023	6.884	0.887	59.440	1.371	58.841	1.296	0.2993	0.0069	0.9670	0.022
0.999	3.739	0.267	42.255	2.267	0.711	0.050	0.2128	0.0114	0.6874	0.011
2.760	7.618	2.101	101.998	2.076	105.494	2.041	0.5668	0.0115	2.2118	0.045
1.021	6.288	0.850	59.111	1.495	61.868	1.490	0.3285	0.0083	1.2818	0.032
1.000	4.625	0.216	45.029	2.593	0.762	0.057	0.2502	0.0144	0.9764	0.014
3.011	9.066	1.882	99.251	1.608	108.791	1.635	0.5964	0.0097	2.8801	0.047
1.018	5.633	0.800	55.385	1.489	61.728	1.542	0.3328	0.0089	1.6072	0.043
1.000	5.817	0.172	45.653	2.213	0.824	0.057	0.2743	0.0133	1.3248	0.013
3.261	10.634	1.645	94.695	2.066	110.589	2.237	0.5985	0.0131	3.6708	0.080
1.016	4.923	0.736	51.698	1.467	62.208	1.592	0.3267	0.0093	2.0040	0.057
1.000	7.464	0.134	44.512	2.561	0.861	0.067	0.2813	0.0162	1.7255	0.016
3.511	12.327	1.389	95.644	2.256	119.880	2.497	0.6122	0.0144	4.9355	0.116
1.014	4.158	0.653	48.681	1.472	63.696	1.688	0.3116	0.0094	2.5121	0.076
1.001	9.873	0.101	48.350	2.723	0.993	0.076	0.3095	0.0174	2.4950	0.017
3.761	14.145	1.115	93.237	2.067	132.367	2.471	0.5713	0.0127	6.3655	0.141
1.013	3.335	0.549	48.761	1.652	72.527	2.020	0.2988	0.0101	3.3290	0.113
1.001	13.692	0.073	45.733	2.670	0.938	0.079	0.2802	0.0164	3.1223	0.016

$E = 13.545$ $\theta = 10.000$

Kinematic Quantities			Radiatively Corrected Cross Sections		Raw Cross Sections		Structure Functions			
W	W^2	Q^2	σ_d^c	$\Delta\sigma_d^c$	σ_d^r	$\Delta\sigma_d^r$	$\nu(W_2$	$\Delta W_2)$	$2M(W_1$	$\Delta W_1)$
S_p	E'	ϵ	σ_p^c	$\Delta\sigma_p^c$	σ_p^r	$\Delta\sigma_p^r$	deuteron			
U	ω'	x'	σ_n^c	$\Delta\sigma_n^c$	n/p Ratio (σ_n^c/σ_p^c)	$\Delta(\sigma_n^c/\Delta_p^c)$	proton / neutron			
2.261	5.112	3.811	35.449	0.624	31.257	0.534	0.2907	0.0051	0.6278	0.011
1.028	9.259	0.918	22.056	0.521	19.641	0.454	0.1809	0.0043	0.3906	0.009
0.996	2.342	0.427	14.328	0.823	0.650	0.048	0.1175	0.0068	0.2537	0.007
2.506	6.280	3.601	41.297	0.726	38.233	0.651	0.3719	0.0065	0.9112	0.016
1.028	8.749	0.898	25.898	0.527	24.052	0.474	0.2332	0.0047	0.5714	0.012
0.997	2.744	0.364	16.506	0.911	0.637	0.044	0.1487	0.0082	0.3642	0.008
2.757	7.601	3.363	45.844	0.804	44.236	0.746	0.4509	0.0079	1.2791	0.022
1.026	8.171	0.872	28.382	0.683	27.622	0.642	0.2791	0.0067	0.7919	0.019
0.998	3.260	0.307	18.617	1.069	0.656	0.049	0.1831	0.0105	0.5194	0.011
3.013	9.078	3.097	49.570	0.888	50.040	0.854	0.5272	0.0094	1.7684	0.032
1.023	7.526	0.837	28.581	0.716	29.311	0.704	0.3039	0.0076	1.0197	0.026
0.999	3.931	0.254	22.107	1.155	0.773	0.055	0.2351	0.0123	0.7887	0.012
3.256	10.602	2.823	50.979	1.025	54.126	1.032	0.5756	0.0116	2.3044	0.046
1.020	6.860	0.795	28.611	0.786	30.999	0.805	0.3231	0.0089	1.2933	0.036
1.000	4.755	0.210	23.387	1.308	0.817	0.062	0.2641	0.0148	1.0572	0.015
3.512	12.334	2.512	50.649	1.065	56.743	1.111	0.5971	0.0126	2.9412	0.062
1.018	6.103	0.739	27.912	0.789	31.918	0.843	0.3291	0.0093	1.6209	0.046
1.000	5.911	0.169	23.649	1.341	0.847	0.065	0.2788	0.0158	1.3733	0.016
3.756	14.108	2.193	52.477	1.137	61.948	1.230	0.6282	0.0136	3.8657	0.084
1.016	5.328	0.673	28.022	0.829	33.816	0.907	0.3355	0.0099	2.0642	0.061
1.000	7.434	0.135	25.295	1.422	0.903	0.070	0.3028	0.0170	1.8633	0.017
4.012	16.096	1.835	52.218	0.928	69.261	1.093	0.6115	0.0109	4.9223	0.087
1.015	4.459	0.587	29.351	0.918	38.821	1.066	0.3437	0.0108	2.7667	0.087
1.001	9.772	0.102	23.674	1.317	0.807	0.065	0.2772	0.0154	2.2316	0.015
4.209	17.716	1.544	53.197	0.850	75.045	0.952	0.5894	0.0094	6.0423	0.097
1.014	3.751	0.508	28.452	0.777	41.678	0.926	0.3152	0.0086	3.2317	0.088
1.001	12.476	0.080	25.515	1.162	0.897	0.060	0.2827	0.0129	2.8982	0.013

$E = 15.204$ $\theta = 10.000$

Kinematic Quantities			Radiatively Corrected Cross Sections		Raw Cross Sections		Structure Functions			
W	W^2	Q^2	σ_d^c	$\Delta\sigma_d^c$	σ_d^r	$\Delta\sigma_d^r$	$\nu(W_2$	$\Delta W_2)$	$2M(W_1$	$\Delta W_1)$
								deuteron		
S_p	E'	ϵ	σ_p^c	$\Delta\sigma_p^c$	σ_p^r	$\Delta\sigma_p^r$		proton		
					n/p Ratio					
U	ω'	x'	σ_n^c	$\Delta\sigma_n^c$	(σ_n^c/σ_p^c)	$\Delta(\sigma_n^c/\Delta_p^c)$		neutron		
2.065	4.264	4.968	14.240	0.341	12.020	0.277	0.1543	0.0037	0.2750	0.007
1.022	10.753	0.929	9.967	0.299	8.476	0.246	0.1080	0.0032	0.1925	0.006
0.991	1.858	0.538	4.545	0.455	0.456	0.056	0.0493	0.0049	0.0878	0.005
2.275	5.176	4.788	18.405	0.365	15.783	0.305	0.2146	0.0043	0.4155	0.008
1.027	10.364	0.917	12.114	0.236	10.409	0.197	0.1412	0.0028	0.2735	0.005
0.994	2.081	0.481	6.747	0.440	0.557	0.043	0.0787	0.0051	0.1523	0.005
2.525	6.376	4.551	23.802	0.466	21.277	0.404	0.3018	0.0059	0.6543	0.013
1.029	9.850	0.900	15.399	0.369	13.912	0.325	0.1953	0.0047	0.4233	0.010
0.996	2.401	0.416	9.057	0.603	0.588	0.049	0.1148	0.0076	0.2490	0.008
2.772	7.684	4.292	27.924	0.553	25.958	0.499	0.3827	0.0076	0.9413	0.019
1.028	9.291	0.877	16.836	0.423	15.808	0.387	0.2307	0.0058	0.5676	0.014
0.997	2.790	0.358	11.834	0.707	0.703	0.054	0.1622	0.0097	0.3989	0.010
3.009	9.054	4.021	31.776	0.630	30.948	0.590	0.4659	0.0092	1.3114	0.026
1.025	8.705	0.850	19.022	0.395	18.693	0.372	0.2789	0.0058	0.7850	0.016
0.998	3.251	0.308	13.522	0.755	0.711	0.049	0.1983	0.0111	0.5580	0.011
3.264	10.654	3.705	32.917	0.669	33.387	0.648	0.5136	0.0104	1.6969	0.035
1.023	8.021	0.814	19.381	0.491	19.860	0.484	0.3024	0.0077	0.9991	0.025
0.999	3.875	0.258	14.279	0.842	0.737	0.056	0.2228	0.0131	0.7361	0.013
3.508	12.306	3.379	36.034	0.799	38.202	0.803	0.5888	0.0130	2.3047	0.051
1.021	7.314	0.771	20.240	0.559	21.678	0.570	0.3307	0.0091	1.2945	0.036
1.000	4.642	0.215	16.551	0.988	0.818	0.064	0.2704	0.0162	1.0586	0.016
3.760	14.138	3.017	36.593	0.825	40.759	0.863	0.6157	0.0139	2.9274	0.066
1.018	6.531	0.716	21.389	0.598	24.156	0.628	0.3599	0.0101	1.7111	0.048
1.000	5.686	0.176	15.863	1.030	0.742	0.063	0.2669	0.0173	1.2691	0.017
4.009	16.072	2.635	37.153	0.880	43.916	0.957	0.6279	0.0149	3.7053	0.088
1.017	5.704	0.650	20.370	0.605	24.426	0.670	0.3443	0.0102	2.0315	0.060
1.000	7.099	0.141	17.415	1.080	0.855	0.070	0.2943	0.0183	1.7368	0.018
4.211	17.733	2.307	37.942	0.955	47.712	1.091	0.6281	0.0158	4.5181	0.114
1.015	4.994	0.586	20.539	0.634	26.503	0.735	0.3400	0.0105	2.4458	0.075
1.001	8.686	0.115	17.990	1.159	0.876	0.075	0.2978	0.0192	2.1422	0.019
4.409	19.439	1.970	39.620	1.098	53.526	1.305	0.6239	0.0173	5.6010	0.155
1.014	4.264	0.514	21.019	0.728	29.600	0.878	0.3310	0.0115	2.9714	0.103
1.001	10.868	0.092	19.175	1.331	0.912	0.085	0.3020	0.0210	2.7107	0.021

E= 17.706 θ = 10.000

Kinematic Quantities			Radiatively Corrected Cross Sections		Raw Cross Sections		Structure Functions			
W	W^2	Q^2	σ_d^c	$\Delta\sigma_d^c$	σ_d^r	$\Delta\sigma_d^r$	$\nu(W_2$	$\Delta W_2)$	$2M(W_1$	$\Delta W_1)$
S_p	E'	ϵ	σ_p^c	$\Delta\sigma_p^c$	σ_p^r	$\Delta\sigma_p^r$	deuteron proton			
U	ω'	x'	σ_n^c	$\Delta\sigma_n^c$	n/p Ratio (σ_n^c/σ_p^c)	$\Delta(\sigma_n^c/\Delta_p^c)$	neutron			
2.283	5.212	6.438	7.429	0.183	6.191	0.149	0.1389	0.0034	0.2354	0.006
1.022	11.967	0.914	5.072	0.161	4.265	0.133	0.0948	0.0030	0.1607	0.005
0.991	1.810	0.553	2.498	0.245	0.492	0.060	0.0467	0.0046	0.0791	0.005
2.519	6.345	6.185	9.960	0.221	8.618	0.187	0.1988	0.0044	0.3682	0.008
1.028	11.497	0.900	6.475	0.186	5.638	0.158	0.1292	0.0037	0.2394	0.007
0.993	2.026	0.494	3.738	0.292	0.577	0.057	0.0746	0.0058	0.1382	0.006
2.758	7.607	5.904	12.851	0.256	11.495	0.222	0.2734	0.0054	0.5602	0.011
1.029	10.975	0.883	8.385	0.214	7.591	0.188	0.1784	0.0045	0.3655	0.009
0.995	2.288	0.437	4.815	0.337	0.574	0.051	0.1024	0.0072	0.2099	0.007
3.011	9.066	5.579	15.639	0.315	14.511	0.282	0.3544	0.0071	0.8179	0.016
1.028	10.371	0.860	9.543	0.250	9.000	0.228	0.2163	0.0057	0.4991	0.013
0.997	2.625	0.381	6.514	0.408	0.683	0.056	0.1476	0.0092	0.3407	0.009
3.265	10.660	5.224	18.064	0.362	17.425	0.334	0.4334	0.0087	1.1412	0.023
1.026	9.710	0.831	10.549	0.272	10.339	0.255	0.2531	0.0065	0.6664	0.017
0.998	3.041	0.329	7.969	0.459	0.755	0.057	0.1912	0.0110	0.5034	0.011
3.511	12.327	4.853	19.860	0.402	19.970	0.383	0.4994	0.0101	1.5129	0.031
1.024	9.020	0.798	11.307	0.297	11.547	0.288	0.2843	0.0075	0.8614	0.023
0.999	3.540	0.282	9.020	0.508	0.798	0.060	0.2268	0.0128	0.6872	0.013
3.757	14.115	4.454	21.079	0.475	22.048	0.468	0.5494	0.0124	1.9416	0.044
1.022	8.279	0.757	11.898	0.343	12.697	0.343	0.3101	0.0089	1.0959	0.032
0.999	4.169	0.240	9.635	0.594	0.810	0.066	0.2511	0.0155	0.8875	0.015
4.014	16.112	4.009	22.587	0.511	24.735	0.519	0.6018	0.0136	2.5410	0.057
1.020	7.452	0.706	12.258	0.354	13.756	0.367	0.3266	0.0094	1.3790	0.040
1.000	5.019	0.199	10.781	0.630	0.880	0.069	0.2873	0.0168	1.2129	0.017
4.208	17.707	3.654	23.107	0.534	26.284	0.564	0.6176	0.0143	3.0236	0.070
1.018	6.792	0.660	12.627	0.376	14.715	0.401	0.3375	0.0100	1.6523	0.049
1.000	5.846	0.171	10.895	0.661	0.863	0.070	0.2912	0.0177	1.4257	0.018
4.408	19.430	3.270	24.605	0.589	29.271	0.637	0.6493	0.0155	3.7607	0.090
1.017	6.078	0.607	13.077	0.420	15.994	0.460	0.3451	0.0111	1.9987	0.064
1.000	6.942	0.144	11.947	0.732	0.914	0.077	0.3153	0.0193	1.8259	0.019
4.615	21.298	2.854	25.814	0.663	32.727	0.734	0.6575	0.0169	4.6280	0.119
1.016	5.304	0.543	13.756	0.448	17.682	0.506	0.3504	0.0114	2.4662	0.080
1.001	8.463	0.118	12.483	0.809	0.907	0.079	0.3179	0.0206	2.2380	0.021
4.812	23.155	2.440	26.054	0.836	35.514	0.975	0.6235	0.0200	5.4272	0.174
1.014	4.535	0.475	15.445	0.540	21.269	0.618	0.3696	0.0129	3.2172	0.113
1.001	10.490	0.095	10.985	1.006	0.711	0.081	0.2629	0.0241	2.2883	0.024
5.008	25.080	2.011	29.830	1.146	44.715	1.386	0.6450	0.0248	7.1973	0.276
1,014	3.738	0.400	15.824	0.702	25.055	0.831	0.3421	0.0152	3.8180	0.169
1.001	13.471	0.074	14.438	1.359	0.912	0.112	0.3122	0.0294	3.4835	0.029

E = 19.350 θ = 10.000

Kinematic Quantities			Radiatively Corrected Cross Sections		Raw Cross Sections		Structure Functions			
W	W^2	Q^2	σ_d^c	$\Delta\sigma_d^c$	σ_d^r	$\Delta\sigma_d^r$	$\nu(W_2$	$\Delta W_2)$	$2M(W_1$	$\Delta W_1)$ deuteron
S_p	E'	ϵ	σ_p^c	$\Delta\sigma_p^c$	σ_p^r	$\Delta\sigma_p^r$				proton
U	ω'	x'	σ_n^c	$\Delta\sigma_n^c$	n/p Ratio (σ_n^c/σ_p^c)	$\Delta(\sigma_n^c/\Delta_p^c)$				neutron
2.259	5.103	7.655	4.024	0.077	3.292	0.061	0.0990	0.0019	0.1550	0.003
1.013	13.020	0.913	2.742	0.072	2.247	0.058	0.0674	0.0018	0.1056	0.003
0.987	1.667	0.600	1.317	0.105	0.480	0.048	0.0324	0.0026	0.0507	0.003
2.518	6.340	7.360	5.725	0.100	4.872	0.083	0.1500	0.0026	0.2563	0.004
1.025	12.518	0.899	3.902	0.095	3.332	0.078	0.1022	0.0025	0.1747	0.004
0.991	1.861	0.537	1.948	0.138	0.499	0.045	0.0510	0.0036	0.0872	0.004
2.765	7.645	7.049	7.652	0.135	6.720	0.115	0.2126	0.0037	0.3990	0.007
1.029	11.989	0.883	5.105	0.123	4.516	0.106	0.1418	0.0034	0.2662	0.006
0.994	2.085	0.480	2.752	0.185	0.539	0.046	0.0765	0.0051	0.1435	0.005
3.016	9.096	6.702	9.732	0.172	8.867	0.151	0.2862	0.0051	0.5971	0.011
1.029	11.400	0.862	6.260	0.154	5.757	0.136	0.1841	0.0045	0.3841	0.009
0.996	2.357	0.424	3.739	0.234	0.597	0.048	0.1099	0.0069	0.2294	0.007
3.259	10.621	6.339	11.347	0.204	10.699	0.184	0.3510	0.0063	0.8198	0.015
1.028	10.781	0.838	7.093	0.179	6.740	0.163	0.2194	0.0055	0.5124	0.013
0.997	2.676	0.374	4.558	0.275	0.643	0.051	0.1410	0.0085	0.3293	0.008
3.506	12.292	5.940	13.214	0.257	12.954	0.239	0.4277	0.0083	1.1323	0.022
1.026	10.103	0.809	8.075	0.213	7.983	0.200	0.2614	0.0069	0.6920	0.018
0.998	3.069	0.326	5.471	0.338	0.678	0.055	0.1771	0.0109	0.4689	0.011
3.756	14.108	5.507	14.311	0.283	14.551	0.270	0.4809	0.0095	1.4629	0.029
1.024	9.366	0.774	8.526	0.231	8.753	0.223	0.2865	0.0078	0.8715	0.024
0.999	3.562	0.281	6.123	0.370	0.718	0.058	0.2057	0.0124	0.6259	0.012
4.009	16.072	5.038	15.794	0.314	16.693	0.309	0.5449	0.0108	1.9346	0.038
1.022	8.569	0.731	9.099	0.248	9.796	0.247	0.3139	0.0085	1.1145	0.030
0.999	4.190	0.239	7.036	0.405	0.773	0.060	0.2427	0.0140	0.8618	0.014
4.212	17.741	4.640	17.083	0.352	18.432	0.352	0.5956	0.0123	2.4216	0.050
1.020	7.892	0.690	9.067	0.257	10.100	0.266	0.3161	0.0090	1.2853	0.036
1.000	4.823	0.207	8.358	0.442	0.922	0.067	0.2914	0.0154	1.1848	0.015
4.414	19.483	4.224	19.161	0.399	21.648	0.409	0.6671	0.0139	3.1419	0.065
1.019	7.185	0.645	9.773	0.282	11.369	0.299	0.3402	0.0098	1.6026	0.046
1.000	5.612	0.178	9.752	0.494	0.998	0.071	0.3395	0.0172	1.5990	0.017
4.607	21.224	3.809	18.322	0.402	21.598	0.427	0.6279	0.0138	3.4518	0.076
1.017	6.479	0.595	9.990	0.293	12.198	0.319	0.3424	0.0100	1.8821	0.055
1.000	6.572	0.152	8.643	0.503	0.865	0.068	0.2962	0.0172	1.6283	0.017
4.808	23.117	3.358	20.020	0.394	24.955	0.427	0.6622	0.0130	4.3548	0.086
1.016	5.711	0.537	9.810	0.318	12.727	0.357	0.3245	0.0105	2.1339	0.069
1.000	7.885	0.127	10.530	0.511	1.073	0.079	0.3483	0.0169	2.2905	0.017
5.008	25.080	2.889	21.149	0.434	28.252	0.491	0.6579	0.0135	5.3002	0.109
1.015	4.914	0.472	11.189	0.316	15.634	0.356	0.3481	0.0098	2.8041	0.079
1.001	9.681	0.103	10.288	0.543	0.919	0.067	0.3200	0.0169	2.5782	0.017
5.214	27.186	2.387	22.997	0.547	34.076	0.658	0.6466	0.0154	6.6545	0.158
1.014	4.060	0.398	11.778	0.463	18.541	0.565	0.3312	0.0130	3.4082	0.134
1.001	12.390	0.081	11.552	0.723	0.981	0.091	0.3248	0.0203	3.3428	0.020
5.412	29.290	1.885	24.585	0.954	42.747	1.268	0.5939	0.0230	8.1469	0.316
1.013	3.206	0.319	12.448	0.655	24.066	0.878	0.3007	0.0158	4.1248	0.217
1.001	16.539	0.060	12.470	1.169	1.002	0.131	0.3012	0.0282	4.1322	0.028