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Photoproduction of W Bosons at HERA: Reweighting Method for implementing QCD Corrections in Monte Carlo Programs

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Abstract

A procedure of implementing QCD corrections in Monte Carlo programs by a reweighting method is described for the photoproduction of W bosons at HERA. Tables for W boson production in LO and NLO are given in bins of the transverse momentum of the W boson and its rapidity.

1 Introduction

In this note we describe the reweighting of leading order (LO) QCD Monte Carlo (MC) programs for W production using analytical next-to-leading order (NLO) calculations [1–3] of the leading QCD corrections. Since collinear divergences appear even at LO due to photon splitting into collinear $q\bar{q}$ pairs, the reweighting has to be performed differently for large and small values of W-transverse momenta $p_{t,W}$.

First, a short overview over the theoretical status is given in Section 2. The reweighting method is explained in Section 3 with particular emphasis on the LO MC program EPVEC [4]. In the appendices tables for the reweighting are presented.

2 NLO QCD Corrections to W Production at HERA

2.1 Cross Sections for W Bosons with transverse momentum

In [3] the differential cross section for $e^{\pm} + p \to e^{\pm} + W + X$ ($X = 1\,\text{or}\,2\,\text{jets}$) has been calculated with respect to the transverse momentum $p_{t,W}$ and rapidity y_W of the W boson; resolved photoproduction is calculated in LO, direct photoproduction in NLO QCD and deep inelastic scattering (DIS) in LO. Typical LO diagrams for the three $W + 1\,\text{jet}$

production mechanisms are depicted in Fig. 1. Typical NLO diagrams in direct photoproduction are shown in Fig. 2.

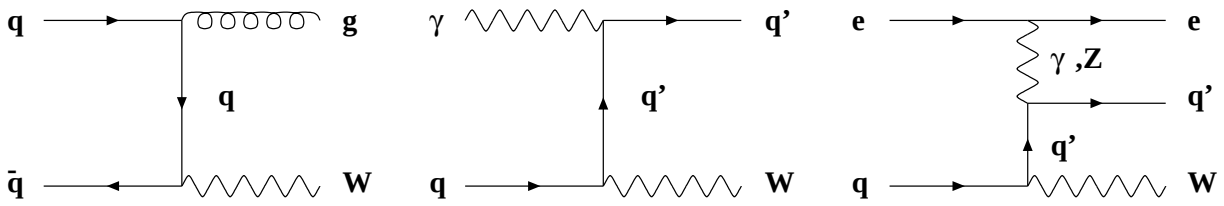

Figure 1: *Typical LO diagrams of W boson production with finite transverse momentum: resolved, direct and DIS mechanism.*

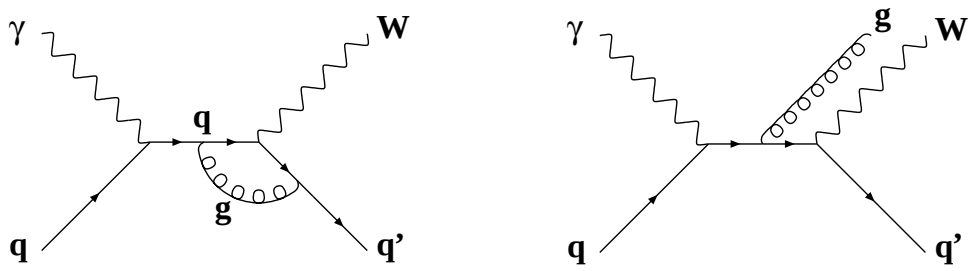

Figure 2: *Typical NLO diagrams (virtual and real corrections) of direct photoproduction of W bosons with finite transverse momentum.*

For $p_{t,W} > 10$ GeV direct photoproduction is the dominating process. NLO QCD corrections modify the LO direct cross section by about $\pm(10-15)\%$ at the nominal renormalization/factorization scale $\mu_R = \mu_F = M_W$ with M_W being the W mass [3]. The remaining theoretical uncertainty is estimated to be about 10% (instead of about 30% in LO).

Since the NLO corrections are moderate and only hardly affect the shapes of the differential distributions [3], they can be implemented with sufficient accuracy in a LO Monte Carlo (MC) program by reweighting the generated events. The hadronic parts of the processes are treated inclusively so that no double counting arises with parton shower effects. The procedure will be described in Section 3.

2.2 Total Cross Sections

In [1, 2] the total cross section for resolved photoproduction of W bosons at HERA is calculated in NLO[1]. The total cross sections for direct photoproduction and DIS are calculated in LO. Typical LO diagrams for these three types of W boson production mechanisms are depicted in Fig. 3. Typical NLO diagrams in resolved photoproduction are shown in Fig. 4.

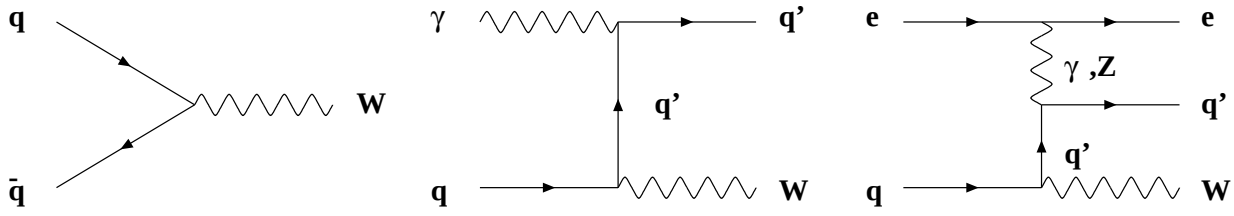

Figure 3: *Typical LO diagrams contributing to the total W boson production cross section: resolved, direct and DIS mechanism.*

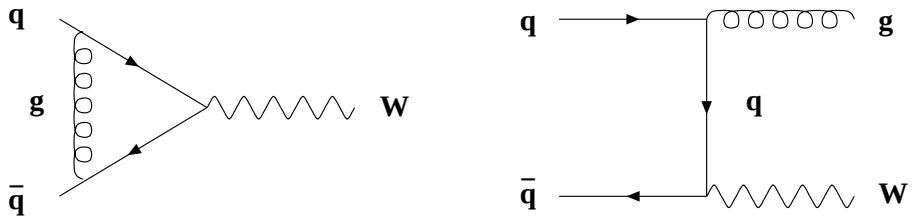

Figure 4: *Typical NLO diagrams (virtual and real corrections) contributing to the total W boson production cross section in the resolved mechanism.*

The total cross section is dominated by low $p_{t,W}$ contributions coming from resolved photoproduction. For this process, the NLO QCD corrections modify the LO contribution by about 40% at the nominal renormalization/factorization scale $\mu_R = \mu_F = M_W$, thus affecting the total W production rate significantly. The inclusion of NLO QCD contribution is estimated to reduce the theoretical uncertainty to roughly 10% compared to about 30% at LO.

[1]Note that the LO resolved photoproduction process is of the order α_s^0 for total W production (cf. Fig. 3) while it is of first order in α_s for $W + 1$ jet production (cf. Fig 1).

3 Reweighting Method

In [1–3] the DIS and photoproduction regimes are separated by a conventional cut in the photon virtuality $-Q^2$. The photoproduction regime is defined as $Q^2 < Q^2_{\max}$ ($Q^2_{\max}$ chosen as 4 GeV^2). If a LO MC uses the same separation cut, the reweighting can be performed separately for the photoproduction regime (DIS stays unreweighted in that case), which is described in the following. This is, however, not the case for the EPVEC MC which will be discussed separately.

3.1 Reweighting for finite transverse momenta of the W boson

For finite transverse momenta of the W boson the event sample for generated partons in the LO MC is divided in bins of the W's transverse momentum $p_{t,W}$ and rapidity y_W (defined to be positive in the electron/positron direction). To implement NLO corrections each generated photoproduction event of the corresponding bin acquires a new weight

$$w = \frac{\frac{d^2\sigma^{LO}_{res}}{dp_{t,W}\,dy_W} + \frac{d^2\sigma^{NLO}_{dir}}{dp_{t,W}\,dy_W}}{\frac{d^2\sigma^{MC}_{res}}{dp_{t,W}\,dy_W} + \frac{d^2\sigma^{MC}_{dir}}{dp_{t,W}\,dy_W}} \,, \tag{1}$$

where $\frac{d^2\sigma^{LO}_{res}}{dp_{t,W}\,dy_W}$ and $\frac{d^2\sigma^{NLO}_{dir}}{dp_{t,W}\,dy_W}$ are the double differential cross sections for resolved photoproduction in LO and direct photoproduction in NLO as calculated in [3]. $\frac{d^2\sigma^{MC}_{res}}{dp_{t,W}\,dy_W}$ and $\frac{d^2\sigma^{MC}_{dir}}{dp_{t,W}\,dy_W}$ are the double differential cross sections for resolved and direct photoproduction in LO taken from the MC[2].

In the appendix tables for the double differential cross sections are given for several values of $p_{t,W}$ and y_W as calculated in [3]. These values should be taken as mean values for the respective bins. The bin widths are $\Delta p_{t,W} = 10$ GeV and $\Delta y_W = 0.25$. The range of $5 < p_{t,W} < 105$ GeV and $-1.375 < y_{W,cms} < 1.375$ in the center of mass system is covered. Bin fluctuations are estimated be less than 2% and thus negligible.

3.2 Reweighting for small transverse momenta of the W boson

Towards small transverse momenta $p_{t,W}$ the differential cross sections diverge due to collinear and infrared divergences. Thus, only the renormalized *total* cross sections are calculated analytically [1, 2]. In the NLO calculation the rapidity-integrated cross section for $p_{t,W} < 5$ GeV can be obtained as

$$\sigma^{NLO}_{res}(p_{t,W} < 5\,\text{GeV}) = \sigma^{NLO}_{res}(\text{total}) - \sigma^{LO}_{res}(p_{t,W} > 5\,\text{GeV}) \tag{2}$$

[2]Note that the denominator in Eq. (1) involves the LO cross sections of the MC and *not* of the analytical calculation [3]. This has the advantage that the major part of differences between the analytical calculation in LO and the MC which could emerge due to different conventions is corrected for.

for resolved photoproduction[3] and by

$$\sigma_{dir}^{LO}(p_{t,W} < 5\,\mathrm{GeV}) = \sigma_{dir}^{LO}(\mathrm{total}) - \sigma_{dir}^{LO}(p_{t,W} > 5\,\mathrm{GeV}) \tag{3}$$

for direct photoproduction. The numerical values are given in the appendix. However, it should be stressed that the values for $\sigma_{res}^{LO}(p_{t,W} > 5\,\mathrm{GeV})$ and $\sigma_{dir}^{LO}(p_{t,W} > 5\,\mathrm{GeV})$ develop sizeable theoretical uncertainties. For the lowest bins with $p_{t,W} < 5$ GeV a rapidity-independent weighting factor is applied:

$$w(p_{t,W} < 5\,\mathrm{GeV}) \;=\; \frac{\sigma_{res}^{NLO}(p_{t,W} < 5\,\mathrm{GeV}) + \sigma_{dir}^{LO}(p_{t,W} < 5\,\mathrm{GeV})}{\sigma_{res}^{MC}(p_{t,W} < 5\,\mathrm{GeV}) + \sigma_{dir}^{MC}(p_{t,W} < 5\,\mathrm{GeV})}\ . \tag{4}$$

3.3 Reweighting EPVEC MC

The analytical calculations [1–3] differ from the calculations of the EPVEC MC generator [4] in several aspects which are discussed in detail in [2]. The differences are well understood and of the order of 10% in the total W production cross section.

One main difference between EPVEC and the above analytical calculations is the different separation between DIS and photoproduction regimes. EPVEC imposes a cut on the u-channel momentum transfer in the $\gamma^* q$ subprocess (see second diagram of Figs. 1, 3) for the separation. In [1–3] the separation is achieved by means of a cut in the photon virtuality $-Q^2$. These differences are qualitatively illustrated in Fig. 5[4].

As a consequence only the sum of DIS and photoproduction cross sections can be reweighted. The weighting factor corresponding to Eq. (1) which has now to be applied to each generated EPVEC W production event (DIS *and* photoproduction), reads

$$w = \frac{\dfrac{d^2\sigma_{res}^{LO}}{dp_{t,W}\,dy_W} + \dfrac{d^2\sigma_{dir}^{NLO}}{dp_{t,W}\,dy_W} + \dfrac{d^2\sigma_{DIS}^{LO}}{dp_{t,W}\,dy_W}}{\dfrac{d^2\sigma_{W\,production}^{\mathrm{EPVEC}}}{dp_{t,W}\,dy_W}}\ , \tag{5}$$

[3]Note that both $\sigma_{res}^{NLO}(\mathrm{total})$ and $\sigma_{res}^{LO}(p_{t,W} > 5\,\mathrm{GeV})$ are of the same order of α_s (cf. Figs. 1, 4).

[4]In Refs. [1–3] direct and resolved photoproduction are disentangled by mass factorization in dimensional regularization. This means, that collinear singularities, arising for the final state quark q' being collinear with the initial state photon, are absorbed into the photonic quark densities defined at the factorization scale μ_F.

In EPVEC the resulting $\gamma q \to W q'$ cross section for the region $|\hat{u}| < u_{cut}$ is split into three parts (cf. Eq. (2.9) of [4]): one contains the photon structure function and is therefore equivalent to the resolved photon part. The residual two parts determine the finite rest after factorizing the resolved photon contribution and remove double counting of the resolved photon cross section with the DIS region. Both terms involve direct photon couplings to fermions and W bosons. However, this should *not* be mixed up with direct photoproduction as defined in Refs. [1–3] and in usual HERA analyses. Moreover, in EPVEC the resolved photon part is defined in the DIS_γ scheme as opposed to the $\overline{\mathrm{MS}}$ scheme of the resolved photoproduction part in Refs. [1–3] and in usual HERA analyses.

The deep inelastic region in EPVEC, defined by $|\hat{u}| > u_{cut}$, is also *not* identical to the DIS part in Ref. [3] and usual HERA analyses. In particular, the direct photoproduction events of Refs. [1–3] with $|\hat{u}| > u_{cut}$ are included in the deep inelastic part of EPVEC.

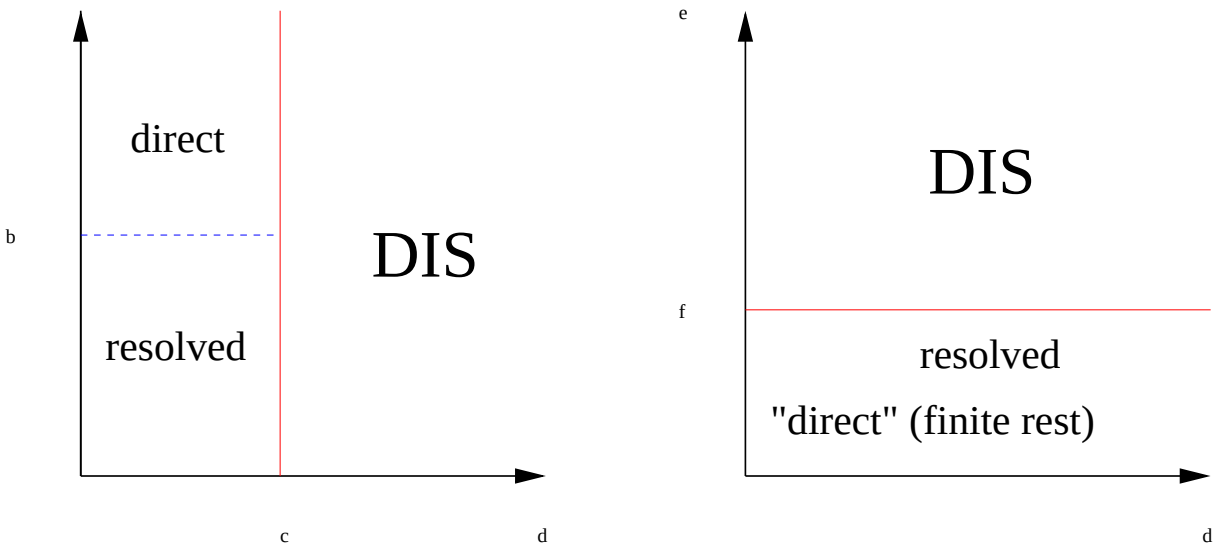

Figure 5: *Different separation between DIS and photoproduction regime in the analytical calculations of Refs. [1–3] (left) and EPVEC [4] (right).*

with the double differential cross section for DIS in LO $\frac{d^2\sigma^{LO}_{DIS}}{dp_{t,W}\,dy_W}$ as calculated in [3] and the W production cross section $\frac{d^2\sigma^{\rm EPVEC}_{W\,production}}{dp_{t,W}\,dy_W}$ taken from EPVEC[5]. Using the EPVEC LO cross sections in the denominator of the weighting factors corrects for the major differences between EPVEC conventions and those of Ref. [3]. (The use of the LO cross sections of [3] would be inconsistent.)

The weighting factor for the first $p_{t,W}$ bin corresponding to Eq. (4) is given by

$$w(p_{t,W}<5\,\text{GeV}) = \frac{\sigma^{NLO}_{res}(p_{t,W}<5\,\text{GeV}) + \sigma^{LO}_{dir}(p_{t,W}<5\,\text{GeV}) + \sigma^{LO}_{DIS}(p_{t,W}<5\,\text{GeV})}{\sigma^{\rm EPVEC}_{W\,production}(p_{t,W}<5\,\text{GeV})}\,. \quad (6)$$

Acknowledgements
We are grateful to D. Dannheim, C. Diaconu, and M. Schneider for useful discussions.

[5]Corresponding to the previous footnote, the W production cross section in EPVEC is the sum of the deep inelastic region with $|\hat{u}| > u_{cut}$ and the photoproduction region with $|\hat{u}| < u_{cut}$.

A Double Differential Cross Sections

Double differential cross sections for different values of transverse momenta $p_{t,W}$ and rapidity, both in the laboratory ($y_{W,lab}$) and the center of mass frame ($y_{W,cms}$), are presented for the individual W production processes calculated in LO and NLO, respectively. The results are given for proton beam energies of $E_p = 820$ GeV and $E_p = 920$ GeV (and electron/positron beam energies of $E_e = 27.5$ GeV). The ACFGP [5] parton densities are chosen for the photon. All other settings and numerical values of parameters and are as in [3]. No entry means that the respective point is out of phase space.

A.1 Double Differential Cross Sections in LO

For the proton CTEQ4L densities [6] are used with LO strong coupling ($\Lambda_5^{(LO)} = 181$ MeV). The following values can be used for consistency checks in LO.

A.1.1 W^+ production in e^+p scattering in LO at $E_p = 920$ GeV

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved	direct	DIS	total
10.	-3.005	-1.25	0.8131E-06	0.1855E-05	0.5255E-06	0.3194E-05
10.	-2.755	-1.00	0.1043E-03	0.1704E-03	0.4724E-04	0.3219E-03
10.	-2.505	-0.75	0.5695E-03	0.8862E-03	0.2477E-03	0.1703E-02
10.	-2.255	-0.50	0.1324E-02	0.2107E-02	0.6025E-03	0.4033E-02
10.	-2.005	-0.25	0.2089E-02	0.3507E-02	0.1033E-02	0.6629E-02
10.	-1.755	0.00	0.2645E-02	0.4772E-02	0.1452E-02	0.8869E-02
10.	-1.505	0.25	0.2881E-02	0.5696E-02	0.1811E-02	0.1039E-01
10.	-1.255	0.50	0.2759E-02	0.6170E-02	0.2055E-02	0.1098E-01
10.	-1.005	0.75	0.2268E-02	0.6142E-02	0.2192E-02	0.1060E-01
10.	-0.755	1.00	0.1396E-02	0.5494E-02	0.2175E-02	0.9065E-02
10.	-0.505	1.25	0.2684E-03	0.3588E-02	0.1814E-02	0.5670E-02
20.	-3.005	-1.25	0.2323E-07	0.1391E-06	0.5303E-07	0.2154E-06
20.	-2.755	-1.00	0.1120E-04	0.4182E-04	0.1516E-04	0.6818E-04
20.	-2.505	-0.75	0.8395E-04	0.3049E-03	0.1093E-03	0.4981E-03
20.	-2.255	-0.50	0.2262E-03	0.8869E-03	0.3219E-03	0.1435E-02
20.	-2.005	-0.25	0.3876E-03	0.1711E-02	0.6338E-03	0.2732E-02
20.	-1.755	0.00	0.5144E-03	0.2620E-02	0.1002E-02	0.4136E-02
20.	-1.505	0.25	0.5728E-03	0.3456E-02	0.1377E-02	0.5406E-02
20.	-1.255	0.50	0.5464E-03	0.4090E-02	0.1707E-02	0.6343E-02
20.	-1.005	0.75	0.4283E-03	0.4420E-02	0.1965E-02	0.6813E-02
20.	-0.755	1.00	0.2246E-03	0.4291E-02	0.2087E-02	0.6603E-02
20.	-0.505	1.25	0.1828E-04	0.2805E-02	0.1632E-02	0.4455E-02

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved	direct	DIS	total
30.	-3.005	-1.25	0.2282E-09	0.3310E-08	0.1568E-08	0.5106E-08
30.	-2.755	-1.00	0.1531E-05	0.1068E-04	0.4488E-05	0.1670E-04
30.	-2.505	-0.75	0.1736E-04	0.1176E-03	0.4860E-04	0.1836E-03
30.	-2.255	-0.50	0.5570E-04	0.4223E-03	0.1755E-03	0.6535E-03
30.	-2.005	-0.25	0.1046E-03	0.9393E-03	0.3940E-03	0.1438E-02
30.	-1.755	0.00	0.1459E-03	0.1602E-02	0.6883E-03	0.2436E-02
30.	-1.505	0.25	0.1657E-03	0.2300E-02	0.1018E-02	0.3484E-02
30.	-1.255	0.50	0.1560E-03	0.2915E-02	0.1346E-02	0.4417E-02
30.	-1.005	0.75	0.1140E-03	0.3321E-02	0.1616E-02	0.5051E-02
30.	-0.755	1.00	0.4749E-04	0.3289E-02	0.1713E-02	0.5049E-02
30.	-0.505	1.25	0.5706E-06	0.1196E-02	0.7715E-03	0.1968E-02
40.	-3.005	-1.25	—	—	—	—
40.	-2.755	-1.00	0.1862E-06	0.2208E-05	0.1050E-05	0.3444E-05
40.	-2.505	-0.75	0.3865E-05	0.4333E-04	0.1994E-04	0.6714E-04
40.	-2.255	-0.50	0.1544E-04	0.1975E-03	0.9035E-04	0.3033E-03
40.	-2.005	-0.25	0.3227E-04	0.5073E-03	0.2341E-03	0.7737E-03
40.	-1.755	0.00	0.4750E-04	0.9568E-03	0.4469E-03	0.1451E-02
40.	-1.505	0.25	0.5486E-04	0.1481E-02	0.7079E-03	0.2244E-02
40.	-1.255	0.50	0.5036E-04	0.1982E-02	0.9758E-03	0.3008E-02
40.	-1.005	0.75	0.3320E-04	0.2327E-02	0.1190E-02	0.3550E-02
40.	-0.755	1.00	0.9690E-05	0.2193E-02	0.1198E-02	0.3401E-02
40.	-0.505	1.25	—	—	—	—
50.	-3.005	-1.25	—	—	—	—
50.	-2.755	-1.00	0.1500E-07	0.2944E-06	0.1566E-06	0.4660E-06
50.	-2.505	-0.75	0.8216E-06	0.1419E-04	0.7156E-05	0.2217E-04
50.	-2.255	-0.50	0.4390E-05	0.8708E-04	0.4347E-04	0.1349E-03
50.	-2.005	-0.25	0.1045E-04	0.2619E-03	0.1298E-03	0.4022E-03
50.	-1.755	0.00	0.1634E-04	0.5464E-03	0.2726E-03	0.8353E-03
50.	-1.505	0.25	0.1911E-04	0.9061E-03	0.4583E-03	0.1384E-02
50.	-1.255	0.50	0.1682E-04	0.1266E-02	0.6555E-03	0.1938E-02
50.	-1.005	0.75	0.9510E-05	0.1492E-02	0.7947E-03	0.2296E-02
50.	-0.755	1.00	0.1492E-05	0.1162E-02	0.6715E-03	0.1835E-02
50.	-0.505	1.25	—	—	—	—
60.	-3.005	-1.25	—	—	—	—
60.	-2.755	-1.00	0.4565E-09	0.1596E-07	0.9506E-08	0.2592E-07
60.	-2.505	-0.75	0.1508E-06	0.3882E-05	0.2124E-05	0.6157E-05
60.	-2.255	-0.50	0.1210E-05	0.3536E-04	0.1887E-04	0.5544E-04
60.	-2.005	-0.25	0.3394E-05	0.1278E-03	0.6748E-04	0.1987E-03
60.	-1.755	0.00	0.5685E-05	0.2970E-03	0.1564E-03	0.4591E-03
60.	-1.505	0.25	0.6697E-05	0.5263E-03	0.2790E-03	0.8120E-03
60.	-1.255	0.50	0.5511E-05	0.7583E-03	0.4063E-03	0.1170E-02
60.	-1.005	0.75	0.2454E-05	0.8557E-03	0.4725E-03	0.1331E-02
60.	-0.755	1.00	0.1036E-06	0.3627E-03	0.2305E-03	0.5933E-03
60.	-0.505	1.25	—	—	—	—

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved	direct	DIS	total
70.	-3.005	-1.25	—	—	—	—
70.	-2.755	-1.00	0.3952E-12	0.5213E-10	0.3583E-10	0.8836E-10
70.	-2.505	-0.75	0.2090E-07	0.8048E-06	0.4760E-06	0.1302E-05
70.	-2.255	-0.50	0.3068E-06	0.1289E-04	0.7302E-05	0.2050E-04
70.	-2.005	-0.25	0.1065E-05	0.5844E-04	0.3245E-04	0.9196E-04
70.	-1.755	0.00	0.1935E-05	0.1530E-03	0.8445E-04	0.2394E-03
70.	-1.505	0.25	0.2279E-05	0.2890E-03	0.1587E-03	0.4500E-03
70.	-1.255	0.50	0.1688E-05	0.4203E-03	0.2324E-03	0.6544E-03
70.	-1.005	0.75	0.5068E-06	0.4132E-03	0.2386E-03	0.6523E-03
70.	-0.755	1.00	0.2210E-09	0.9553E-05	0.7524E-05	0.1708E-04
70.	-0.505	1.25	—	—	—	—
80.	-3.005	-1.25	—	—	—	—
80.	-2.755	-1.00	—	—	—	—
80.	-2.505	-0.75	0.1695E-08	0.1035E-06	0.6542E-07	0.1706E-06
80.	-2.255	-0.50	0.6698E-07	0.4048E-05	0.2421E-05	0.6536E-05
80.	-2.005	-0.25	0.3110E-06	0.2462E-04	0.1431E-04	0.3924E-04
80.	-1.755	0.00	0.6247E-06	0.7392E-04	0.4203E-04	0.1166E-03
80.	-1.505	0.25	0.7264E-06	0.1481E-03	0.8384E-04	0.2327E-03
80.	-1.255	0.50	0.4554E-06	0.2092E-03	0.1193E-03	0.3290E-03
80.	-1.005	0.75	0.6620E-07	0.1432E-03	0.8821E-04	0.2315E-03
80.	-0.755	1.00	—	—	—	—
80.	-0.505	1.25	—	—	—	—
90.	-3.005	-1.25	—	—	—	—
90.	-2.755	-1.00	—	—	—	—
90.	-2.505	-0.75	0.4201E-10	0.4786E-08	0.3225E-08	0.8053E-08
90.	-2.255	-0.50	0.1137E-07	0.1016E-05	0.6335E-06	0.1661E-05
90.	-2.005	-0.25	0.8057E-07	0.9275E-05	0.5557E-05	0.1491E-04
90.	-1.755	0.00	0.1840E-06	0.3281E-04	0.1915E-04	0.5214E-04
90.	-1.505	0.25	0.2071E-06	0.6903E-04	0.3994E-04	0.1092E-03
90.	-1.255	0.50	0.9832E-07	0.8767E-04	0.5190E-04	0.1397E-03
90.	-1.005	0.75	0.2796E-08	0.2136E-04	0.1458E-04	0.3594E-04
90.	-0.755	1.00	—	—	—	—
90.	-0.505	1.25	—	—	—	—
100.	-3.005	-1.25	—	—	—	—
100.	-2.755	-1.00	—	—	—	—
100.	-2.505	-0.75	0.1548E-14	0.2014E-11	0.1621E-11	0.3637E-11
100.	-2.255	-0.50	0.1240E-08	0.1749E-06	0.1128E-06	0.2889E-06
100.	-2.005	-0.25	0.1722E-07	0.2963E-05	0.1820E-05	0.4800E-05
100.	-1.755	0.00	0.4679E-07	0.1287E-04	0.7700E-05	0.2062E-04
100.	-1.505	0.25	0.4926E-07	0.2779E-04	0.1648E-04	0.4432E-04
100.	-1.255	0.50	0.1412E-07	0.2681E-04	0.1662E-04	0.4344E-04
100.	-1.005	0.75	0.4983E-12	0.4537E-07	0.3874E-07	0.8411E-07
100.	-0.755	1.00	—	—	—	—
100.	-0.505	1.25	—	—	—	—

Table 1: $d^2\sigma/dp_{t,W}\,dy_W$ *(in pb/GeV) in LO.*

A.1.2 W^- production in e^+p scattering in LO at $E_p = 920$ GeV

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved	direct	DIS	total
10.	-3.005	-1.25	0.1793E-06	0.4959E-06	0.1413E-06	0.8165E-06
10.	-2.755	-1.00	0.4464E-04	0.8154E-04	0.2281E-04	0.1490E-03
10.	-2.505	-0.75	0.3561E-03	0.5749E-03	0.1620E-03	0.1093E-02
10.	-2.255	-0.50	0.1074E-02	0.1661E-02	0.4746E-03	0.3210E-02
10.	-2.005	-0.25	0.2034E-02	0.3139E-02	0.9106E-03	0.6084E-02
10.	-1.755	0.00	0.2914E-02	0.4619E-02	0.1360E-02	0.8893E-02
10.	-1.505	0.25	0.3429E-02	0.5750E-02	0.1723E-02	0.1090E-01
10.	-1.255	0.50	0.3426E-02	0.6317E-02	0.1931E-02	0.1167E-01
10.	-1.005	0.75	0.2864E-02	0.6229E-02	0.1957E-02	0.1105E-01
10.	-0.755	1.00	0.1761E-02	0.5352E-02	0.1788E-02	0.8901E-02
10.	-0.505	1.25	0.3336E-03	0.3018E-02	0.1213E-02	0.4565E-02
20.	-3.005	-1.25	0.4619E-08	0.3239E-07	0.1246E-07	0.4947E-07
20.	-2.755	-1.00	0.4374E-05	0.1756E-04	0.6399E-05	0.2833E-04
20.	-2.505	-0.75	0.4836E-04	0.1689E-03	0.6078E-04	0.2780E-03
20.	-2.255	-0.50	0.1706E-03	0.5794E-03	0.2087E-03	0.9587E-03
20.	-2.005	-0.25	0.3543E-03	0.1239E-02	0.4486E-03	0.2042E-02
20.	-1.755	0.00	0.5370E-03	0.2016E-02	0.7387E-03	0.3292E-02
20.	-1.505	0.25	0.6517E-03	0.2741E-02	0.1017E-02	0.4410E-02
20.	-1.255	0.50	0.6532E-03	0.3269E-02	0.1234E-02	0.5156E-02
20.	-1.005	0.75	0.5235E-03	0.3485E-02	0.1341E-02	0.5350E-02
20.	-0.755	1.00	0.2748E-03	0.3221E-02	0.1300E-02	0.4796E-02
20.	-0.505	1.25	0.2162E-04	0.1694E-02	0.7906E-03	0.2506E-02
30.	-3.005	-1.25	0.3912E-10	0.6209E-09	0.2968E-09	0.9568E-09
30.	-2.755	-1.00	0.5449E-06	0.3953E-05	0.1659E-05	0.6157E-05
30.	-2.505	-0.75	0.9244E-05	0.5737E-04	0.2352E-04	0.9013E-04
30.	-2.255	-0.50	0.3915E-04	0.2395E-03	0.9768E-04	0.3763E-03
30.	-2.005	-0.25	0.8985E-04	0.5822E-03	0.2365E-03	0.9085E-03
30.	-1.755	0.00	0.1443E-03	0.1044E-02	0.4259E-03	0.1614E-02
30.	-1.505	0.25	0.1799E-03	0.1538E-02	0.6315E-03	0.2349E-02
30.	-1.255	0.50	0.1790E-03	0.1960E-02	0.8133E-03	0.2952E-02
30.	-1.005	0.75	0.1342E-03	0.2198E-02	0.9286E-03	0.3261E-02
30.	-0.755	1.00	0.5588E-04	0.2040E-02	0.8967E-03	0.2993E-02
30.	-0.505	1.25	0.5758E-06	0.4728E-03	0.2470E-03	0.7204E-03

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved	direct	DIS	total
40.	-3.005	-1.25	—	—	—	—
40.	-2.755	-1.00	0.5961E-07	0.7095E-06	0.3342E-06	0.1103E-05
40.	-2.505	-0.75	0.1896E-05	0.1879E-04	0.8473E-05	0.2916E-04
40.	-2.255	-0.50	0.1011E-04	0.9964E-04	0.4413E-04	0.1539E-03
40.	-2.005	-0.25	0.2604E-04	0.2783E-03	0.1223E-03	0.4266E-03
40.	-1.755	0.00	0.4447E-04	0.5497E-03	0.2414E-03	0.8356E-03
40.	-1.505	0.25	0.5670E-04	0.8694E-03	0.3810E-03	0.1307E-02
40.	-1.255	0.50	0.5523E-04	0.1166E-02	0.5152E-03	0.1736E-02
40.	-1.005	0.75	0.3739E-04	0.1335E-02	0.5983E-03	0.1971E-02
40.	-0.755	1.00	0.1077E-04	0.1133E-02	0.5264E-03	0.1670E-02
40.	-0.505	1.25	—	—	—	—
50.	-3.005	-1.25	—	—	—	—
50.	-2.755	-1.00	0.4192E-08	0.7982E-07	0.4155E-07	0.1256E-06
50.	-2.505	-0.75	0.3685E-06	0.5464E-05	0.2654E-05	0.8486E-05
50.	-2.255	-0.50	0.2671E-05	0.3944E-04	0.1869E-04	0.6080E-04
50.	-2.005	-0.25	0.7911E-05	0.1292E-03	0.6013E-04	0.1972E-03
50.	-1.755	0.00	0.1445E-04	0.2818E-03	0.1304E-03	0.4267E-03
50.	-1.505	0.25	0.1875E-04	0.4761E-03	0.2200E-03	0.7149E-03
50.	-1.255	0.50	0.1755E-04	0.6623E-03	0.3069E-03	0.9867E-03
50.	-1.005	0.75	0.1014E-04	0.7455E-03	0.3487E-03	0.1104E-02
50.	-0.755	1.00	0.1506E-05	0.4795E-03	0.2350E-03	0.7160E-03
50.	-0.505	1.25	—	—	—	—
60.	-3.005	-1.25	—	—	—	—
60.	-2.755	-1.00	0.1053E-09	0.3458E-08	0.1990E-08	0.5553E-08
60.	-2.505	-0.75	0.6090E-07	0.1312E-05	0.6817E-06	0.2055E-05
60.	-2.255	-0.50	0.6792E-06	0.1438E-04	0.7173E-05	0.2223E-04
60.	-2.005	-0.25	0.2398E-05	0.5699E-04	0.2790E-04	0.8729E-04
60.	-1.755	0.00	0.4728E-05	0.1385E-03	0.6679E-04	0.2100E-03
60.	-1.505	0.25	0.6205E-05	0.2489E-03	0.1198E-03	0.3749E-03
60.	-1.255	0.50	0.5425E-05	0.3524E-03	0.1692E-03	0.5270E-03
60.	-1.005	0.75	0.2435E-05	0.3664E-03	0.1776E-03	0.5464E-03
60.	-0.755	1.00	0.8603E-07	0.1065E-03	0.5540E-04	0.1620E-03
60.	-0.505	1.25	—	—	—	—
70.	-3.005	-1.25	—	—	—	—
70.	-2.755	-1.00	0.5886E-13	0.7708E-11	0.5089E-11	0.1286E-10
70.	-2.505	-0.75	0.7397E-08	0.2336E-06	0.1289E-06	0.3699E-06
70.	-2.255	-0.50	0.1571E-06	0.4675E-05	0.2440E-05	0.7272E-05
70.	-2.005	-0.25	0.6973E-06	0.2349E-04	0.1195E-04	0.3614E-04
70.	-1.755	0.00	0.1504E-05	0.6438E-04	0.3225E-04	0.9813E-04
70.	-1.505	0.25	0.1978E-05	0.1225E-03	0.6073E-04	0.1852E-03
70.	-1.255	0.50	0.1548E-05	0.1717E-03	0.8492E-04	0.2582E-03
70.	-1.005	0.75	0.4531E-06	0.1463E-03	0.7334E-04	0.2201E-03
70.	-0.755	1.00	0.1021E-09	0.1389E-05	0.8180E-06	0.2207E-05
70.	-0.505	1.25	—	—	—	—

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved	direct	DIS	total
80.	-3.005	-1.25	—	—	—	—
80.	-2.755	-1.00	—	—	—	—
80.	-2.505	-0.75	0.5040E-09	0.2480E-07	0.1443E-07	0.3973E-07
80.	-2.255	-0.50	0.3074E-07	0.1291E-05	0.7001E-06	0.2022E-05
80.	-2.005	-0.25	0.1867E-06	0.8849E-05	0.4655E-05	0.1369E-04
80.	-1.755	0.00	0.4491E-06	0.2787E-04	0.1433E-04	0.4265E-04
80.	-1.505	0.25	0.5837E-06	0.5572E-04	0.2834E-04	0.8464E-04
80.	-1.255	0.50	0.3814E-06	0.7359E-04	0.3728E-04	0.1113E-03
80.	-1.005	0.75	0.5022E-07	0.3938E-04	0.2043E-04	0.5986E-04
80.	-0.755	1.00	—	—	—	—
80.	-0.505	1.25	—	—	—	—
90.	-3.005	-1.25	—	—	—	—
90.	-2.755	-1.00	—	—	—	—
90.	-2.505	-0.75	0.9792E-11	0.8881E-09	0.5439E-09	0.1442E-08
90.	-2.255	-0.50	0.4561E-08	0.2782E-06	0.1559E-06	0.4387E-06
90.	-2.005	-0.25	0.4366E-07	0.2940E-05	0.1580E-05	0.4564E-05
90.	-1.755	0.00	0.1207E-06	0.1094E-04	0.5740E-05	0.1680E-04
90.	-1.505	0.25	0.1516E-06	0.2265E-04	0.1174E-04	0.3454E-04
90.	-1.255	0.50	0.7295E-07	0.2573E-04	0.1337E-04	0.3917E-04
90.	-1.005	0.75	0.1580E-08	0.4043E-05	0.2211E-05	0.6256E-05
90.	-0.755	1.00	—	—	—	—
90.	-0.505	1.25	—	—	—	—
100.	-3.005	-1.25	—	—	—	—
100.	-2.755	-1.00	—	—	—	—
100.	-2.505	-0.75	0.9160E-16	0.1484E-12	0.1111E-12	0.2596E-12
100.	-2.255	-0.50	0.4183E-09	0.3969E-07	0.2284E-07	0.6295E-07
100.	-2.005	-0.25	0.8245E-08	0.8121E-06	0.4453E-06	0.1266E-05
100.	-1.755	0.00	0.2751E-07	0.3731E-05	0.1989E-05	0.5748E-05
100.	-1.505	0.25	0.3206E-07	0.7779E-05	0.4113E-05	0.1192E-04
100.	-1.255	0.50	0.8829E-08	0.6266E-05	0.3336E-05	0.9611E-05
100.	-1.005	0.75	0.1296E-12	0.4005E-08	0.2494E-08	0.6499E-08
100.	-0.755	1.00	—	—	—	—
100.	-0.505	1.25	—	—	—	—

Table 2: $d^2\sigma/dp_{t,W}\,dy_W$ *(in pb/GeV) in LO.*

A.1.3 W^+ production in e^+p scattering in LO at $E_p = 820$ GeV

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved	direct	DIS	total
10.	-2.948	-1.25	0.3168E-07	0.9891E-07	0.2882E-07	0.1594E-06
10.	-2.698	-1.00	0.4986E-04	0.8805E-04	0.2460E-04	0.1625E-03
10.	-2.448	-0.75	0.3891E-03	0.6344E-03	0.1784E-03	0.1202E-02
10.	-2.198	-0.50	0.1030E-02	0.1699E-02	0.4881E-03	0.3217E-02
10.	-1.948	-0.25	0.1727E-02	0.2991E-02	0.8845E-03	0.5602E-02
10.	-1.698	0.00	0.2252E-02	0.4192E-02	0.1280E-02	0.7724E-02
10.	-1.448	0.25	0.2479E-02	0.5078E-02	0.1618E-02	0.9175E-02
10.	-1.198	0.50	0.2362E-02	0.5531E-02	0.1854E-02	0.9747E-02
10.	-0.948	0.75	0.1882E-02	0.5482E-02	0.1986E-02	0.9350E-02
10.	-0.698	1.00	0.1033E-02	0.4764E-02	0.1939E-02	0.7736E-02
10.	-0.448	1.25	0.6522E-04	0.2386E-02	0.1352E-02	0.3803E-02
20.	-2.948	-1.25	0.1106E-09	0.1491E-08	0.6306E-09	0.2232E-08
20.	-2.698	-1.00	0.4567E-05	0.1878E-04	0.6882E-05	0.3023E-04
20.	-2.448	-0.75	0.5344E-04	0.2038E-03	0.7379E-04	0.3310E-03
20.	-2.198	-0.50	0.1684E-03	0.6836E-03	0.2489E-03	0.1101E-02
20.	-1.948	-0.25	0.3099E-03	0.1412E-02	0.5249E-03	0.2247E-02
20.	-1.698	0.00	0.4255E-03	0.2244E-02	0.8617E-03	0.3531E-02
20.	-1.448	0.25	0.4793E-03	0.3021E-02	0.1211E-02	0.4711E-02
20.	-1.198	0.50	0.4528E-03	0.3611E-02	0.1517E-02	0.5581E-02
20.	-0.948	0.75	0.3387E-03	0.3901E-02	0.1753E-02	0.5993E-02
20.	-0.698	1.00	0.1492E-03	0.3685E-02	0.1823E-02	0.5657E-02
20.	-0.448	1.25	0.9960E-06	0.1201E-02	0.7814E-03	0.1983E-02
30.	-2.948	-1.25	—	—	—	—
30.	-2.698	-1.00	0.4967E-06	0.3920E-05	0.1673E-05	0.6090E-05
30.	-2.448	-0.75	0.1013E-04	0.7266E-04	0.3024E-04	0.1130E-03
30.	-2.198	-0.50	0.3932E-04	0.3100E-03	0.1294E-03	0.4787E-03
30.	-1.948	-0.25	0.8039E-04	0.7482E-03	0.3166E-03	0.1145E-02
30.	-1.698	0.00	0.1166E-03	0.1334E-02	0.5763E-03	0.2027E-02
30.	-1.448	0.25	0.1340E-03	0.1966E-02	0.8771E-03	0.2977E-02
30.	-1.198	0.50	0.1241E-03	0.2524E-02	0.1171E-02	0.3819E-02
30.	-0.948	0.75	0.8465E-04	0.2874E-02	0.1401E-02	0.4360E-02
30.	-0.698	1.00	0.2693E-04	0.2707E-02	0.1432E-02	0.4166E-02
30.	-0.448	1.25	—	—	—	—

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved	direct	DIS	total
40.	-2.948	-1.25	—	—	—	—
40.	-2.698	-1.00	0.4123E-07	0.5774E-06	0.2788E-06	0.8974E-06
40.	-2.448	-0.75	0.2008E-05	0.2418E-04	0.1124E-04	0.3743E-04
40.	-2.198	-0.50	0.1021E-04	0.1371E-03	0.6307E-04	0.2104E-03
40.	-1.948	-0.25	0.2365E-04	0.3889E-03	0.1797E-03	0.5923E-03
40.	-1.698	0.00	0.3644E-04	0.7737E-03	0.3624E-03	0.1173E-02
40.	-1.448	0.25	0.4254E-04	0.1234E-02	0.5916E-03	0.1868E-02
40.	-1.198	0.50	0.3803E-04	0.1676E-02	0.8260E-03	0.2540E-02
40.	-0.948	0.75	0.2261E-04	0.1952E-02	0.1001E-02	0.2976E-02
40.	-0.698	1.00	0.4182E-05	0.1626E-02	0.9047E-03	0.2535E-02
40.	-0.448	1.25	—	—	—	—
50.	-2.948	-1.25	—	—	—	—
50.	-2.698	-1.00	0.1555E-08	0.3953E-07	0.2158E-07	0.6266E-07
50.	-2.448	-0.75	0.3618E-06	0.6870E-05	0.3490E-05	0.1072E-04
50.	-2.198	-0.50	0.2672E-05	0.5644E-04	0.2820E-04	0.8731E-04
50.	-1.948	-0.25	0.7227E-05	0.1920E-03	0.9553E-04	0.2948E-03
50.	-1.698	0.00	0.1192E-04	0.4271E-03	0.2140E-03	0.6530E-03
50.	-1.448	0.25	0.1406E-04	0.7334E-03	0.3718E-03	0.1119E-02
50.	-1.198	0.50	0.1186E-04	0.1038E-02	0.5347E-03	0.1585E-02
50.	-0.948	0.75	0.5712E-05	0.1188E-02	0.6349E-03	0.1829E-02
50.	-0.698	1.00	0.3551E-06	0.6387E-03	0.3846E-03	0.1024E-02
50.	-0.448	1.25	—	—	—	—
60.	-2.948	-1.25	—	—	—	—
60.	-2.698	-1.00	0.5485E-11	0.3495E-09	0.2162E-09	0.5712E-09
60.	-2.448	-0.75	0.5153E-07	0.1513E-05	0.8345E-06	0.2399E-05
60.	-2.198	-0.50	0.6588E-06	0.2094E-04	0.1117E-04	0.3277E-04
60.	-1.948	-0.25	0.2178E-05	0.8869E-04	0.4689E-04	0.1378E-03
60.	-1.698	0.00	0.3891E-05	0.2227E-03	0.1172E-03	0.3438E-03
60.	-1.448	0.25	0.4604E-05	0.4102E-03	0.2167E-03	0.6315E-03
60.	-1.198	0.50	0.3542E-05	0.5940E-03	0.3175E-03	0.9150E-03
60.	-0.948	0.75	0.1207E-05	0.6174E-03	0.3439E-03	0.9625E-03
60.	-0.698	1.00	0.2850E-08	0.4959E-04	0.3558E-04	0.8517E-04
60.	-0.448	1.25	—	—	—	—
70.	-2.948	-1.25	—	—	—	—
70.	-2.698	-1.00	—	—	—	—
70.	-2.448	-0.75	0.4608E-08	0.2167E-06	0.1282E-06	0.3495E-06
70.	-2.198	-0.50	0.1427E-06	0.6728E-05	0.3798E-05	0.1067E-04
70.	-1.948	-0.25	0.6194E-06	0.3772E-04	0.2097E-04	0.5931E-04
70.	-1.698	0.00	0.1219E-05	0.1087E-03	0.5952E-04	0.1694E-03
70.	-1.448	0.25	0.1432E-05	0.2138E-03	0.1168E-03	0.3320E-03
70.	-1.198	0.50	0.9492E-06	0.3062E-03	0.1690E-03	0.4761E-03
70.	-0.948	0.75	0.1734E-06	0.2410E-03	0.1423E-03	0.3835E-03
70.	-0.698	1.00	—	—	—	—
70.	-0.448	1.25	—	—	—	—

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved	direct	DIS	total
80.	-2.948	-1.25	—	—	—	—
80.	-2.698	-1.00	—	—	—	—
80.	-2.448	-0.75	0.1504E-09	0.1291E-07	0.8212E-08	0.2127E-07
80.	-2.198	-0.50	0.2459E-07	0.1747E-05	0.1039E-05	0.2811E-05
80.	-1.948	-0.25	0.1581E-06	0.1437E-04	0.8241E-05	0.2277E-04
80.	-1.698	0.00	0.3519E-06	0.4871E-04	0.2747E-04	0.7653E-04
80.	-1.448	0.25	0.4027E-06	0.1015E-03	0.5691E-04	0.1588E-03
80.	-1.198	0.50	0.2083E-06	0.1344E-03	0.7689E-04	0.2115E-03
80.	-0.948	0.75	0.9899E-08	0.4760E-04	0.3088E-04	0.7849E-04
80.	-0.698	1.00	—	—	—	—
80.	-0.448	1.25	—	—	—	—
90.	-2.948	-1.25	—	—	—	—
90.	-2.698	-1.00	—	—	—	—
90.	-2.448	-0.75	0.1701E-12	0.5315E-10	0.3726E-10	0.9058E-10
90.	-2.198	-0.50	0.2821E-08	0.3187E-06	0.1973E-06	0.5188E-06
90.	-1.948	-0.25	0.3368E-07	0.4667E-05	0.2760E-05	0.7461E-05
90.	-1.698	0.00	0.8855E-07	0.1935E-04	0.1122E-04	0.3066E-04
90.	-1.448	0.25	0.9563E-07	0.4185E-04	0.2409E-04	0.6604E-04
90.	-1.198	0.50	0.3160E-07	0.4433E-04	0.2653E-04	0.7089E-04
90.	-0.948	0.75	0.1475E-10	0.5639E-06	0.4400E-06	0.1004E-05
90.	-0.698	1.00	—	—	—	—
90.	-0.448	1.25	—	—	—	—
100.	-2.948	-1.25	—	—	—	—
100.	-2.698	-1.00	—	—	—	—
100.	-2.448	-0.75	—	—	—	—
100.	-2.198	-0.50	0.1444E-09	0.2938E-07	0.1889E-07	0.4841E-07
100.	-1.948	-0.25	0.5305E-08	0.1175E-05	0.7130E-06	0.1893E-05
100.	-1.698	0.00	0.1779E-07	0.6383E-05	0.3787E-05	0.1019E-04
100.	-1.448	0.25	0.1702E-07	0.1369E-04	0.8094E-05	0.2180E-04
100.	-1.198	0.50	0.2211E-08	0.7962E-05	0.5099E-05	0.1306E-04
100.	-0.948	0.75	—	—	—	—
100.	-0.698	1.00	—	—	—	—
100.	-0.448	1.25	—	—	—	—

Table 3: $d^2\sigma/dp_{t,W}\,dy_W$ *(in pb/GeV) in LO.*

A.1.4 W^- production in e^+p scattering in LO at $E_p = 820$ GeV

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved	direct	DIS	total
10.	-2.948	-1.25	0.5473E-08	0.2069E-07	0.6063E-08	0.3223E-07
10.	-2.698	-1.00	0.1930E-04	0.3815E-04	0.1074E-04	0.6819E-04
10.	-2.448	-0.75	0.2288E-03	0.3872E-03	0.1096E-03	0.7256E-03
10.	-2.198	-0.50	0.8009E-03	0.1284E-02	0.3683E-03	0.2453E-02
10.	-1.948	-0.25	0.1633E-02	0.2600E-02	0.7565E-03	0.4990E-02
10.	-1.698	0.00	0.2432E-02	0.3975E-02	0.1171E-02	0.7578E-02
10.	-1.448	0.25	0.2915E-02	0.5052E-02	0.1516E-02	0.9483E-02
10.	-1.198	0.50	0.2914E-02	0.5600E-02	0.1709E-02	0.1022E-01
10.	-0.948	0.75	0.2370E-02	0.5498E-02	0.1736E-02	0.9604E-02
10.	-0.698	1.00	0.1302E-02	0.4547E-02	0.1549E-02	0.7398E-02
10.	-0.448	1.25	0.8026E-04	0.1763E-02	0.7882E-03	0.2631E-02
20.	-2.948	-1.25	0.1552E-10	0.2461E-09	0.1061E-09	0.3677E-09
20.	-2.698	-1.00	0.1609E-05	0.7147E-05	0.2633E-05	0.1139E-04
20.	-2.448	-0.75	0.2889E-04	0.1066E-03	0.3877E-04	0.1743E-03
20.	-2.198	-0.50	0.1214E-03	0.4293E-03	0.1558E-03	0.7065E-03
20.	-1.948	-0.25	0.2744E-03	0.9930E-03	0.3611E-03	0.1628E-02
20.	-1.698	0.00	0.4344E-03	0.1688E-02	0.6194E-03	0.2742E-02
20.	-1.448	0.25	0.5372E-03	0.2352E-02	0.8745E-03	0.3764E-02
20.	-1.198	0.50	0.5361E-03	0.2837E-02	0.1070E-02	0.4443E-02
20.	-0.948	0.75	0.4114E-03	0.3014E-02	0.1167E-02	0.4592E-02
20.	-0.698	1.00	0.1815E-03	0.2664E-02	0.1094E-02	0.3940E-02
20.	-0.448	1.25	0.1050E-05	0.5279E-03	0.2793E-03	0.8083E-03
30.	-2.948	-1.25	—	—	—	—
30.	-2.698	-1.00	0.1583E-06	0.1303E-05	0.5553E-06	0.2017E-05
30.	-2.448	-0.75	0.5046E-05	0.3342E-04	0.1382E-04	0.5229E-04
30.	-2.198	-0.50	0.2637E-04	0.1690E-03	0.6898E-04	0.2644E-03
30.	-1.948	-0.25	0.6672E-04	0.4500E-03	0.1839E-03	0.7006E-03
30.	-1.698	0.00	0.1125E-03	0.8488E-03	0.3461E-03	0.1307E-02
30.	-1.448	0.25	0.1428E-03	0.1286E-02	0.5278E-03	0.1957E-02
30.	-1.198	0.50	0.1405E-03	0.1659E-02	0.6891E-03	0.2489E-02
30.	-0.948	0.75	0.9850E-04	0.1846E-02	0.7821E-03	0.2727E-02
30.	-0.698	1.00	0.3113E-04	0.1581E-02	0.7063E-03	0.2318E-02
30.	-0.448	1.25	—	—	—	—

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved	direct	DIS	total
40.	-2.948	-1.25	—	—	—	—
40.	-2.698	-1.00	0.1162E-07	0.1633E-06	0.7834E-07	0.2533E-06
40.	-2.448	-0.75	0.9161E-06	0.9828E-05	0.4477E-05	0.1522E-04
40.	-2.198	-0.50	0.6357E-05	0.6625E-04	0.2956E-04	0.1022E-03
40.	-1.948	-0.25	0.1838E-04	0.2063E-03	0.9101E-04	0.3157E-03
40.	-1.698	0.00	0.3315E-04	0.4319E-03	0.1897E-03	0.6547E-03
40.	-1.448	0.25	0.4300E-04	0.7050E-03	0.3102E-03	0.1058E-02
40.	-1.198	0.50	0.4094E-04	0.9564E-03	0.4232E-03	0.1421E-02
40.	-0.948	0.75	0.2498E-04	0.1073E-02	0.4830E-03	0.1581E-02
40.	-0.698	1.00	0.4452E-05	0.7582E-03	0.3605E-03	0.1123E-02
40.	-0.448	1.25	—	—	—	—
50.	-2.948	-1.25	—	—	—	—
50.	-2.698	-1.00	0.3692E-09	0.9088E-08	0.4879E-08	0.1434E-07
50.	-2.448	-0.75	0.1493E-06	0.2451E-05	0.1202E-05	0.3802E-05
50.	-2.198	-0.50	0.1536E-05	0.2433E-04	0.1157E-04	0.3744E-04
50.	-1.948	-0.25	0.5241E-05	0.9110E-04	0.4264E-04	0.1390E-03
50.	-1.698	0.00	0.1019E-04	0.2128E-03	0.9861E-04	0.3216E-03
50.	-1.448	0.25	0.1342E-04	0.3722E-03	0.1721E-03	0.5577E-03
50.	-1.198	0.50	0.1206E-04	0.5209E-03	0.2418E-03	0.7748E-03
50.	-0.948	0.75	0.5896E-05	0.5569E-03	0.2624E-03	0.8252E-03
50.	-0.698	1.00	0.3219E-06	0.2176E-03	0.1105E-03	0.3284E-03
50.	-0.448	1.25	—	—	—	—
60.	-2.948	-1.25	—	—	—	—
60.	-2.698	-1.00	0.9742E-12	0.5895E-10	0.3557E-10	0.9549E-10
60.	-2.448	-0.75	0.1879E-07	0.4649E-06	0.2448E-06	0.7285E-06
60.	-2.198	-0.50	0.3462E-06	0.8025E-05	0.4029E-05	0.1240E-04
60.	-1.948	-0.25	0.1464E-05	0.3773E-04	0.1845E-04	0.5764E-04
60.	-1.698	0.00	0.3107E-05	0.9948E-04	0.4818E-04	0.1508E-03
60.	-1.448	0.25	0.4117E-05	0.1854E-03	0.8919E-04	0.2787E-03
60.	-1.198	0.50	0.3361E-05	0.2609E-03	0.1255E-03	0.3898E-03
60.	-0.948	0.75	0.1133E-05	0.2402E-03	0.1177E-03	0.3590E-03
60.	-0.698	1.00	0.1665E-08	0.9333E-05	0.5264E-05	0.1460E-04
60.	-0.448	1.25	—	—	—	—
70.	-2.948	-1.25	—	—	—	—
70.	-2.698	-1.00	—	—	—	—
70.	-2.448	-0.75	0.1428E-08	0.5537E-07	0.3083E-07	0.8763E-07
70.	-2.198	-0.50	0.6747E-07	0.2265E-05	0.1187E-05	0.3519E-05
70.	-1.948	-0.25	0.3823E-06	0.1431E-04	0.7293E-05	0.2199E-04
70.	-1.698	0.00	0.9015E-06	0.4333E-04	0.2168E-04	0.6591E-04
70.	-1.448	0.25	0.1187E-05	0.8549E-04	0.4243E-04	0.1291E-03
70.	-1.198	0.50	0.8257E-06	0.1157E-03	0.5751E-04	0.1740E-03
70.	-0.948	0.75	0.1405E-06	0.7359E-04	0.3751E-04	0.1112E-03
70.	-0.698	1.00	—	—	—	—
70.	-0.448	1.25	—	—	—	—

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved	direct	DIS	total
80.	-2.948	-1.25	—	—	—	—
80.	-2.698	-1.00	—	—	—	—
80.	-2.448	-0.75	0.3712E-10	0.2587E-08	0.1531E-08	0.4155E-08
80.	-2.198	-0.50	0.1021E-07	0.5057E-06	0.2752E-06	0.7911E-06
80.	-1.948	-0.25	0.8823E-07	0.4802E-05	0.2507E-05	0.7397E-05
80.	-1.698	0.00	0.2378E-06	0.1715E-04	0.8814E-05	0.2620E-04
80.	-1.448	0.25	0.3046E-06	0.3535E-04	0.1798E-04	0.5363E-04
80.	-1.198	0.50	0.1615E-06	0.4247E-04	0.2162E-04	0.6425E-04
80.	-0.948	0.75	0.6195E-08	0.1024E-04	0.5499E-05	0.1575E-04
80.	-0.698	1.00	—	—	—	—
80.	-0.448	1.25	—	—	—	—
90.	-2.948	-1.25	—	—	—	—
90.	-2.698	-1.00	—	—	—	—
90.	-2.448	-0.75	0.2767E-13	0.7313E-11	0.4737E-11	0.1208E-10
90.	-2.198	-0.50	0.9914E-09	0.7672E-07	0.4321E-07	0.1209E-06
90.	-1.948	-0.25	0.1665E-07	0.1347E-05	0.7220E-06	0.2086E-05
90.	-1.698	0.00	0.5370E-07	0.5913E-05	0.3109E-05	0.9076E-05
90.	-1.448	0.25	0.6450E-07	0.1242E-04	0.6451E-05	0.1894E-04
90.	-1.198	0.50	0.2085E-07	0.1119E-04	0.5879E-05	0.1709E-04
90.	-0.948	0.75	0.5000E-11	0.6326E-07	0.3770E-07	0.1010E-06
90.	-0.698	1.00	—	—	—	—
90.	-0.448	1.25	—	—	—	—
100.	-2.948	-1.25	—	—	—	—
100.	-2.698	-1.00	—	—	—	—
100.	-2.448	-0.75	—	—	—	—
100.	-2.198	-0.50	0.4055E-10	0.5574E-08	0.3242E-08	0.8857E-08
100.	-1.948	-0.25	0.2253E-08	0.2849E-06	0.1561E-06	0.4433E-06
100.	-1.698	0.00	0.9440E-08	0.1652E-05	0.8851E-06	0.2547E-05
100.	-1.448	0.25	0.9898E-08	0.3355E-05	0.1778E-05	0.5143E-05
100.	-1.198	0.50	0.1140E-08	0.1490E-05	0.8106E-06	0.2302E-05
100.	-0.948	0.75	—	—	—	—
100.	-0.698	1.00	—	—	—	—
100.	-0.448	1.25	—	—	—	—

Table 4: $d^2\sigma/dp_{t,W}\,dy_W$ *(in pb/GeV) in LO.*

A.1.5 $W^{\pm}$ production in $e^{-}p$ scattering in LO at $E_p = 920$ GeV

In $e^{-}p$ scattering the results for resolved and direct photoproduction are identical to those of $e^{+}p$ scattering, while the DIS results are different:

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	DIS: W^+ production	DIS: W^- production
10.	-3.005	-1.25	0.5293E-06	0.1421E-06
10.	-2.755	-1.00	0.4723E-04	0.2297E-04
10.	-2.505	-0.75	0.2459E-03	0.1629E-03
10.	-2.255	-0.50	0.5924E-03	0.4762E-03
10.	-2.005	-0.25	0.1003E-02	0.9137E-03
10.	-1.755	0.00	0.1400E-02	0.1371E-02
10.	-1.505	0.25	0.1713E-02	0.1738E-02
10.	-1.255	0.50	0.1904E-02	0.1950E-02
10.	-1.005	0.75	0.1963E-02	0.1999E-02
10.	-0.755	1.00	0.1863E-02	0.1857E-02
10.	-0.505	1.25	0.1423E-02	0.1301E-02
20.	-3.005	-1.25	0.5471E-07	0.1275E-07
20.	-2.755	-1.00	0.1545E-04	0.6544E-05
20.	-2.505	-0.75	0.1105E-03	0.6238E-04
20.	-2.255	-0.50	0.3184E-03	0.2142E-03
20.	-2.005	-0.25	0.6188E-03	0.4610E-03
20.	-1.755	0.00	0.9592E-03	0.7611E-03
20.	-1.505	0.25	0.1286E-02	0.1052E-02
20.	-1.255	0.50	0.1546E-02	0.1288E-02
20.	-1.005	0.75	0.1708E-02	0.1430E-02
20.	-0.755	1.00	0.1715E-02	0.1417E-02
20.	-0.505	1.25	0.1252E-02	0.9296E-03
30.	-3.005	-1.25	0.1659E-08	0.3110E-09
30.	-2.755	-1.00	0.4690E-05	0.1743E-05
30.	-2.505	-0.75	0.4996E-04	0.2469E-04
30.	-2.255	-0.50	0.1766E-03	0.1026E-03
30.	-2.005	-0.25	0.3887E-03	0.2491E-03
30.	-1.755	0.00	0.6654E-03	0.4509E-03
30.	-1.505	0.25	0.9619E-03	0.6734E-03
30.	-1.255	0.50	0.1222E-02	0.8779E-03
30.	-1.005	0.75	0.1401E-02	0.1023E-02
30.	-0.755	1.00	0.1409E-02	0.1022E-02
30.	-0.505	1.25	0.5914E-03	0.3246E-03

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	DIS: W^+ production	DIS: W^- production
40.	-3.005	-1.25	—	—
40.	-2.755	-1.00	0.1124E-05	0.3616E-06
40.	-2.505	-0.75	0.2090E-04	0.9162E-05
40.	-2.255	-0.50	0.9266E-04	0.4768E-04
40.	-2.005	-0.25	0.2343E-03	0.1325E-03
40.	-1.755	0.00	0.4375E-03	0.2632E-03
40.	-1.505	0.25	0.6741E-03	0.4212E-03
40.	-1.255	0.50	0.8945E-03	0.5770E-03
40.	-1.005	0.75	0.1041E-02	0.6847E-03
40.	-0.755	1.00	0.9832E-03	0.6333E-03
40.	-0.505	1.25	—	—
50.	-3.005	-1.25	—	—
50.	-2.755	-1.00	0.1718E-06	0.4696E-07
50.	-2.505	-0.75	0.7646E-05	0.2980E-05
50.	-2.255	-0.50	0.4505E-04	0.2098E-04
50.	-2.005	-0.25	0.1329E-03	0.6793E-04
50.	-1.755	0.00	0.2722E-03	0.1482E-03
50.	-1.505	0.25	0.4421E-03	0.2524E-03
50.	-1.255	0.50	0.6058E-03	0.3573E-03
50.	-1.005	0.75	0.6945E-03	0.4187E-03
50.	-0.755	1.00	0.5432E-03	0.3029E-03
50.	-0.505	1.25	—	—
60.	-3.005	-1.25	—	—
60.	-2.755	-1.00	0.1052E-07	0.2346E-08
60.	-2.505	-0.75	0.2314E-05	0.8042E-06
60.	-2.255	-0.50	0.2006E-04	0.8471E-05
60.	-2.005	-0.25	0.7002E-04	0.3296E-04
60.	-1.755	0.00	0.1582E-03	0.7978E-04
60.	-1.505	0.25	0.2710E-03	0.1437E-03
60.	-1.255	0.50	0.3760E-03	0.2074E-03
60.	-1.005	0.75	0.4090E-03	0.2261E-03
60.	-0.755	1.00	0.1785E-03	0.7872E-04
60.	-0.505	1.25	—	—
70.	-3.005	-1.25	—	—
70.	-2.755	-1.00	0.3927E-10	0.6367E-11
70.	-2.505	-0.75	0.5238E-06	0.1605E-06
70.	-2.255	-0.50	0.7859E-05	0.3035E-05
70.	-2.005	-0.25	0.3410E-04	0.1487E-04
70.	-1.755	0.00	0.8562E-04	0.4036E-04
70.	-1.505	0.25	0.1547E-03	0.7713E-04
70.	-1.255	0.50	0.2135E-03	0.1100E-03
70.	-1.005	0.75	0.2007E-03	0.1000E-03
70.	-0.755	1.00	0.5346E-05	0.1337E-05
70.	-0.505	1.25	—	—

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	DIS: W^+ production	DIS: W^- production
80.	-3.005	-1.25	—	—
80.	-2.755	-1.00	—	—
80.	-2.505	-0.75	0.7232E-07	0.1910E-07
80.	-2.255	-0.50	0.2632E-05	0.9281E-06
80.	-2.005	-0.25	0.1510E-04	0.6154E-05
80.	-1.755	0.00	0.4303E-04	0.1909E-04
80.	-1.505	0.25	0.8141E-04	0.3819E-04
80.	-1.255	0.50	0.1077E-03	0.5168E-04
80.	-1.005	0.75	0.7082E-04	0.3033E-04
80.	-0.755	1.00	—	—
80.	-0.505	1.25	—	—
90.	-3.005	-1.25	—	—
90.	-2.755	-1.00	—	—
90.	-2.505	-0.75	0.3538E-08	0.7691E-09
90.	-2.255	-0.50	0.6903E-06	0.2202E-06
90.	-2.005	-0.25	0.5895E-05	0.2236E-05
90.	-1.755	0.00	0.1951E-04	0.8173E-05
90.	-1.505	0.25	0.3826E-04	0.1690E-04
90.	-1.255	0.50	0.4519E-04	0.1981E-04
90.	-1.005	0.75	0.1100E-04	0.3613E-05
90.	-0.755	1.00	—	—
90.	-0.505	1.25	—	—
100.	-3.005	-1.25	—	—
100.	-2.755	-1.00	—	—
100.	-2.505	-0.75	0.1656E-11	0.1663E-12
100.	-2.255	-0.50	0.1213E-06	0.3464E-07
100.	-2.005	-0.25	0.1918E-05	0.6756E-06
100.	-1.755	0.00	0.7739E-05	0.3034E-05
100.	-1.505	0.25	0.1536E-04	0.6341E-05
100.	-1.255	0.50	0.1384E-04	0.5356E-05
100.	-1.005	0.75	0.2668E-07	0.4547E-08
100.	-0.755	1.00	—	—
100.	-0.505	1.25	—	—

Table 5: $d^2\sigma/dp_{t,W}\,dy_W$ *(in pb/GeV) in LO.*

A.2 Double Differential Cross Sections including NLO

For the proton CTEQ4M densities [6] are used with NLO strong coupling ($\Lambda_5^{(\overline{\rm MS})} = 202$ MeV). The NLO direct part is the sum of 1-jet and 2-jet configurations and thus independent of the jet definition. The following tables also contain the LO cross sections for all processes, now using CTEQ4M densities with NLO α_s as for the NLO direct part. The total sum is given as the sum of the resolved LO, direct NLO and DIS LO part. The following values should be used for the reweighting according to Eqs. (1,5). Note that in order to avoid double counting the cross sections for LO resolved photoproduction convoluted with NLO parton densities have to be added to the NLO direct part.

A.2.1 W^+ production in e^+p scattering including NLO at $E_p = 920$ GeV

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved LO	direct LO	direct NLO	DIS LO	total
10.	-3.005	-1.25	0.5250E-06	0.1196E-05	0.1920E-05	0.3387E-06	0.2784E-05
10.	-2.755	-1.00	0.8354E-04	0.1356E-03	0.1740E-03	0.3761E-04	0.2951E-03
10.	-2.505	-0.75	0.5007E-03	0.7714E-03	0.8789E-03	0.2158E-03	0.1595E-02
10.	-2.255	-0.50	0.1233E-02	0.1938E-02	0.2043E-02	0.5535E-03	0.3830E-02
10.	-2.005	-0.25	0.2032E-02	0.3359E-02	0.3362E-02	0.9887E-03	0.6383E-02
10.	-1.755	0.00	0.2666E-02	0.4720E-02	0.4537E-02	0.1439E-02	0.8642E-02
10.	-1.505	0.25	0.2990E-02	0.5780E-02	0.5425E-02	0.1833E-02	0.1025E-01
10.	-1.255	0.50	0.2932E-02	0.6386E-02	0.5902E-02	0.2117E-02	0.1095E-01
10.	-1.005	0.75	0.2454E-02	0.6448E-02	0.5997E-02	0.2277E-02	0.1073E-01
10.	-0.755	1.00	0.1530E-02	0.5818E-02	0.5639E-02	0.2294E-02	0.9463E-02
10.	-0.505	1.25	0.2961E-03	0.3796E-02	0.4144E-02	0.1907E-02	0.6347E-02
20.	-3.005	-1.25	0.1419E-07	0.8502E-07	0.1395E-06	0.3245E-07	0.1861E-06
20.	-2.755	-1.00	0.8735E-05	0.3245E-04	0.4493E-04	0.1175E-04	0.6542E-04
20.	-2.505	-0.75	0.7242E-04	0.2601E-03	0.3345E-03	0.9312E-04	0.5000E-03
20.	-2.255	-0.50	0.2077E-03	0.8008E-03	0.9825E-03	0.2907E-03	0.1481E-02
20.	-2.005	-0.25	0.3727E-03	0.1609E-02	0.1913E-02	0.5947E-03	0.2881E-02
20.	-1.755	0.00	0.5136E-03	0.2544E-02	0.2944E-02	0.9702E-03	0.4428E-02
20.	-1.505	0.25	0.5903E-03	0.3440E-02	0.3902E-02	0.1367E-02	0.5859E-02
20.	-1.255	0.50	0.5776E-03	0.4150E-02	0.4642E-02	0.1729E-02	0.6949E-02
20.	-1.005	0.75	0.4616E-03	0.4549E-02	0.5063E-02	0.2013E-02	0.7537E-02
20.	-0.755	1.00	0.2450E-03	0.4455E-02	0.4947E-02	0.2152E-02	0.7344E-02
20.	-0.505	1.25	0.1984E-04	0.2888E-02	0.3240E-02	0.1671E-02	0.4931E-02

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved LO	direct LO	direct NLO	DIS LO	total
30.	-3.005	-1.25	0.1256E-09	0.1821E-08	0.2969E-08	0.8648E-09	0.3959E-08
30.	-2.755	-1.00	0.1156E-05	0.8038E-05	0.1097E-04	0.3385E-05	0.1551E-04
30.	-2.505	-0.75	0.1467E-04	0.9825E-04	0.1253E-03	0.4077E-04	0.1807E-03
30.	-2.255	-0.50	0.5033E-04	0.3745E-03	0.4580E-03	0.1552E-03	0.6636E-03
30.	-2.005	-0.25	0.9932E-04	0.8685E-03	0.1031E-02	0.3646E-03	0.1495E-02
30.	-1.755	0.00	0.1442E-03	0.1529E-02	0.1776E-02	0.6563E-03	0.2576E-02
30.	-1.505	0.25	0.1693E-03	0.2252E-02	0.2566E-02	0.9994E-03	0.3735E-02
30.	-1.255	0.50	0.1638E-03	0.2910E-02	0.3268E-02	0.1341E-02	0.4773E-02
30.	-1.005	0.75	0.1220E-03	0.3364E-02	0.3737E-02	0.1631E-02	0.5490E-02
30.	-0.755	1.00	0.5131E-04	0.3356E-02	0.3701E-02	0.1744E-02	0.5496E-02
30.	-0.505	1.25	0.5799E-06	0.1171E-02	0.1330E-02	0.7541E-03	0.2085E-02
40.	-3.005	-1.25	—	—	—	—	—
40.	-2.755	-1.00	0.1348E-06	0.1595E-05	0.2125E-05	0.7590E-06	0.3019E-05
40.	-2.505	-0.75	0.3183E-05	0.3533E-04	0.4393E-04	0.1627E-04	0.6339E-04
40.	-2.255	-0.50	0.1369E-04	0.1719E-03	0.2058E-03	0.7856E-04	0.2981E-03
40.	-2.005	-0.25	0.3019E-04	0.4615E-03	0.5377E-03	0.2126E-03	0.7805E-03
40.	-1.755	0.00	0.4638E-04	0.8995E-03	0.1027E-02	0.4204E-03	0.1494E-02
40.	-1.505	0.25	0.5549E-04	0.1428E-02	0.1603E-02	0.6822E-03	0.2341E-02
40.	-1.255	0.50	0.5236E-04	0.1950E-02	0.2158E-02	0.9581E-03	0.3169E-02
40.	-1.005	0.75	0.3514E-04	0.2322E-02	0.2540E-02	0.1185E-02	0.3760E-02
40.	-0.755	1.00	0.1026E-04	0.2195E-02	0.2387E-02	0.1195E-02	0.3592E-02
40.	-0.505	1.25	—	—	—	—	—
50.	-3.005	-1.25	—	—	—	—	—
50.	-2.755	-1.00	0.1023E-07	0.2008E-06	0.2632E-06	0.1070E-06	0.3804E-06
50.	-2.505	-0.75	0.6562E-06	0.1125E-04	0.1368E-04	0.5688E-05	0.2002E-04
50.	-2.255	-0.50	0.3809E-05	0.7429E-04	0.8687E-04	0.3687E-04	0.1275E-03
50.	-2.005	-0.25	0.9609E-05	0.2343E-03	0.2675E-03	0.1162E-03	0.3933E-03
50.	-1.755	0.00	0.1572E-04	0.5060E-03	0.5666E-03	0.2525E-03	0.8348E-03
50.	-1.505	0.25	0.1907E-04	0.8615E-03	0.9508E-03	0.4351E-03	0.1405E-02
50.	-1.255	0.50	0.1725E-04	0.1228E-02	0.1337E-02	0.6325E-03	0.1987E-02
50.	-1.005	0.75	0.9885E-05	0.1465E-02	0.1584E-02	0.7758E-03	0.2369E-02
50.	-0.755	1.00	0.1518E-05	0.1131E-02	0.1227E-02	0.6515E-03	0.1880E-02
50.	-0.505	1.25	—	—	—	—	—
60.	-3.005	-1.25	—	—	—	—	—
60.	-2.755	-1.00	0.2843E-09	0.9956E-08	0.1310E-07	0.5942E-08	0.1933E-07
60.	-2.505	-0.75	0.1159E-06	0.2969E-05	0.3547E-05	0.1627E-05	0.5290E-05
60.	-2.255	-0.50	0.1023E-05	0.2949E-04	0.3386E-04	0.1572E-04	0.5061E-04
60.	-2.005	-0.25	0.3054E-05	0.1123E-03	0.1259E-03	0.5935E-04	0.1883E-03
60.	-1.755	0.00	0.5369E-05	0.2707E-03	0.2978E-03	0.1426E-03	0.4458E-03
60.	-1.505	0.25	0.6566E-05	0.4930E-03	0.5359E-03	0.2606E-03	0.8031E-03
60.	-1.255	0.50	0.5541E-05	0.7241E-03	0.7792E-03	0.3874E-03	0.1172E-02
60.	-1.005	0.75	0.2481E-05	0.8236E-03	0.8816E-03	0.4541E-03	0.1338E-02
60.	-0.755	1.00	0.9759E-07	0.3350E-03	0.3706E-03	0.2122E-03	0.5829E-03
60.	-0.505	1.25	—	—	—	—	—

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved LO	direct LO	direct NLO	DIS LO	total
70.	-3.005	-1.25	—	—	—	—	—
70.	-2.755	-1.00	0.1961E-12	0.2683E-10	0.3963E-10	0.1850E-10	0.5833E-10
70.	-2.505	-0.75	0.1529E-07	0.5882E-06	0.6953E-06	0.3481E-06	0.1059E-05
70.	-2.255	-0.50	0.2514E-06	0.1046E-04	0.1183E-04	0.5930E-05	0.1801E-04
70.	-2.005	-0.25	0.9348E-06	0.5033E-04	0.5559E-04	0.2797E-04	0.8450E-04
70.	-1.755	0.00	0.1787E-05	0.1371E-03	0.1489E-03	0.7516E-04	0.2259E-03
70.	-1.505	0.25	0.2184E-05	0.2662E-03	0.2859E-03	0.1460E-03	0.4341E-03
70.	-1.255	0.50	0.1653E-05	0.3941E-03	0.4200E-03	0.2173E-03	0.6390E-03
70.	-1.005	0.75	0.4913E-06	0.3870E-03	0.4140E-03	0.2231E-03	0.6376E-03
70.	-0.755	1.00	0.1716E-09	0.7560E-05	0.9404E-05	0.5968E-05	0.1537E-04
70.	-0.505	1.25	—	—	—	—	—
80.	-3.005	-1.25	—	—	—	—	—
80.	-2.755	-1.00	—	—	—	—	—
80.	-2.505	-0.75	0.1159E-08	0.7098E-07	0.8404E-07	0.4481E-07	0.1300E-06
80.	-2.255	-0.50	0.5286E-07	0.3180E-05	0.3559E-05	0.1904E-05	0.5516E-05
80.	-2.005	-0.25	0.2652E-06	0.2071E-04	0.2259E-04	0.1199E-04	0.3485E-04
80.	-1.755	0.00	0.5617E-06	0.6494E-04	0.6974E-04	0.3691E-04	0.1072E-03
80.	-1.505	0.25	0.6772E-06	0.1339E-03	0.1425E-03	0.7542E-04	0.2186E-03
80.	-1.255	0.50	0.4307E-06	0.1917E-03	0.2033E-03	0.1092E-03	0.3129E-03
80.	-1.005	0.75	0.6029E-07	0.1286E-03	0.1390E-03	0.7920E-04	0.2182E-03
80.	-0.755	1.00	—	—	—	—	—
80.	-0.505	1.25	—	—	—	—	—
90.	-3.005	-1.25	—	—	—	—	—
90.	-2.755	-1.00	—	—	—	—	—
90.	-2.505	-0.75	0.2592E-10	0.2972E-08	0.3621E-08	0.2007E-08	0.5654E-08
90.	-2.255	-0.50	0.8564E-08	0.7657E-06	0.8531E-06	0.4763E-06	0.1338E-05
90.	-2.005	-0.25	0.6637E-07	0.7587E-05	0.8213E-05	0.4536E-05	0.1281E-04
90.	-1.755	0.00	0.1603E-06	0.2815E-04	0.3001E-04	0.1643E-04	0.4660E-04
90.	-1.505	0.25	0.1866E-06	0.6093E-04	0.6442E-04	0.3524E-04	0.9985E-04
90.	-1.255	0.50	0.8886E-07	0.7791E-04	0.8269E-04	0.4593E-04	0.1287E-03
90.	-1.005	0.75	0.2305E-08	0.1775E-04	0.1998E-04	0.1211E-04	0.3209E-04
90.	-0.755	1.00	—	—	—	—	—
90.	-0.505	1.25	—	—	—	—	—
100.	-3.005	-1.25	—	—	—	—	—
100.	-2.755	-1.00	—	—	—	—	—
100.	-2.505	-0.75	0.5040E-15	0.7961E-12	0.1314E-11	0.6485E-12	0.1963E-11
100.	-2.255	-0.50	0.8783E-09	0.1245E-06	0.1398E-06	0.8061E-07	0.2213E-06
100.	-2.005	-0.25	0.1361E-07	0.2340E-05	0.2527E-05	0.1437E-05	0.3978E-05
100.	-1.755	0.00	0.3926E-07	0.1073E-04	0.1139E-04	0.6403E-05	0.1784E-04
100.	-1.505	0.25	0.4257E-07	0.2380E-04	0.2518E-04	0.1409E-04	0.3931E-04
100.	-1.255	0.50	0.1201E-07	0.2279E-04	0.2449E-04	0.1411E-04	0.3862E-04
100.	-1.005	0.75	0.3185E-12	0.2977E-07	0.4014E-07	0.2550E-07	0.6564E-07
100.	-0.755	1.00	—	—	—	—	—
100.	-0.505	1.25	—	—	—	—	—

Table 6: *$d^2\sigma/dp_{t,W}\,dy_W$ (in pb/GeV) in LO and NLO.*

A.2.2 W^- production in e^+p scattering including NLO at $E_p = 920$ GeV

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved LO	direct LO	direct NLO	DIS LO	total
10.	-3.005	-1.25	0.1134E-06	0.3140E-06	0.5113E-06	0.8955E-07	0.7143E-06
10.	-2.755	-1.00	0.3554E-04	0.6458E-04	0.8387E-04	0.1809E-04	0.1375E-03
10.	-2.505	-0.75	0.3109E-03	0.4974E-03	0.5700E-03	0.1402E-03	0.1021E-02
10.	-2.255	-0.50	0.9940E-03	0.1518E-02	0.1595E-02	0.4328E-03	0.3022E-02
10.	-2.005	-0.25	0.1968E-02	0.2992E-02	0.2949E-02	0.8679E-03	0.5785E-02
10.	-1.755	0.00	0.2922E-02	0.4552E-02	0.4258E-02	0.1337E-02	0.8517E-02
10.	-1.505	0.25	0.3541E-02	0.5820E-02	0.5285E-02	0.1744E-02	0.1057E-01
10.	-1.255	0.50	0.3621E-02	0.6527E-02	0.5816E-02	0.1981E-02	0.1142E-01
10.	-1.005	0.75	0.3082E-02	0.6535E-02	0.5847E-02	0.2047E-02	0.1098E-01
10.	-0.755	1.00	0.1918E-02	0.5671E-02	0.5359E-02	0.1887E-02	0.9164E-02
10.	-0.505	1.25	0.3656E-03	0.3197E-02	0.3542E-02	0.1283E-02	0.5191E-02
20.	-3.005	-1.25	0.2742E-08	0.1928E-07	0.3201E-07	0.7440E-08	0.4219E-07
20.	-2.755	-1.00	0.3396E-05	0.1359E-04	0.1908E-04	0.4957E-05	0.2743E-04
20.	-2.505	-0.75	0.4152E-04	0.1436E-03	0.1869E-03	0.5186E-04	0.2802E-03
20.	-2.255	-0.50	0.1559E-03	0.5212E-03	0.6455E-03	0.1881E-03	0.9895E-03
20.	-2.005	-0.25	0.3393E-03	0.1161E-02	0.1388E-02	0.4211E-03	0.2148E-02
20.	-1.755	0.00	0.5341E-03	0.1951E-02	0.2273E-02	0.7144E-03	0.3521E-02
20.	-1.505	0.25	0.6684E-03	0.2723E-02	0.3108E-02	0.1013E-02	0.4790E-02
20.	-1.255	0.50	0.6865E-03	0.3314E-02	0.3742E-02	0.1250E-02	0.5678E-02
20.	-1.005	0.75	0.5604E-03	0.3586E-02	0.4041E-02	0.1380E-02	0.5981E-02
20.	-0.755	1.00	0.2977E-03	0.3342E-02	0.3794E-02	0.1349E-02	0.5441E-02
20.	-0.505	1.25	0.2330E-04	0.1736E-02	0.2033E-02	0.8107E-03	0.2867E-02
30.	-3.005	-1.25	0.2069E-10	0.3271E-09	0.5379E-09	0.1567E-09	0.7153E-09
30.	-2.755	-1.00	0.4098E-06	0.2966E-05	0.4113E-05	0.1250E-05	0.5772E-05
30.	-2.505	-0.75	0.7785E-05	0.4784E-04	0.6200E-04	0.1965E-04	0.8944E-04
30.	-2.255	-0.50	0.3527E-04	0.2119E-03	0.2636E-03	0.8621E-04	0.3850E-03
30.	-2.005	-0.25	0.8510E-04	0.5369E-03	0.6488E-03	0.2181E-03	0.9520E-03
30.	-1.755	0.00	0.1422E-03	0.9945E-03	0.1175E-02	0.4061E-03	0.1723E-02
30.	-1.505	0.25	0.1831E-03	0.1502E-02	0.1746E-02	0.6168E-03	0.2546E-02
30.	-1.255	0.50	0.1868E-03	0.1953E-02	0.2243E-02	0.8104E-03	0.3240E-02
30.	-1.005	0.75	0.1427E-03	0.2221E-02	0.2533E-02	0.9380E-03	0.3614E-02
30.	-0.755	1.00	0.5994E-04	0.2074E-02	0.2363E-02	0.9113E-03	0.3334E-02
30.	-0.505	1.25	0.5849E-06	0.4557E-03	0.5410E-03	0.2387E-03	0.7803E-03

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved LO	direct LO	direct NLO	DIS LO	total
40.	-3.005	-1.25	—	—	—	—	—
40.	-2.755	-1.00	0.4289E-07	0.5102E-06	0.6913E-06	0.2409E-06	0.9751E-06
40.	-2.505	-0.75	0.1559E-05	0.1531E-04	0.1940E-04	0.6896E-05	0.2786E-04
40.	-2.255	-0.50	0.8955E-05	0.8660E-04	0.1058E-03	0.3828E-04	0.1530E-03
40.	-2.005	-0.25	0.2434E-04	0.2525E-03	0.3000E-03	0.1109E-03	0.4353E-03
40.	-1.755	0.00	0.4337E-04	0.5152E-03	0.6011E-03	0.2251E-03	0.8696E-03
40.	-1.505	0.25	0.5720E-04	0.8358E-03	0.9605E-03	0.3675E-03	0.1385E-02
40.	-1.255	0.50	0.5717E-04	0.1143E-02	0.1298E-02	0.5047E-03	0.1860E-02
40.	-1.005	0.75	0.3935E-04	0.1326E-02	0.1494E-02	0.5930E-03	0.2127E-02
40.	-0.755	1.00	0.1134E-04	0.1124E-02	0.1265E-02	0.5234E-03	0.1800E-02
40.	-0.505	1.25	—	—	—	—	—
50.	-3.005	-1.25	—	—	—	—	—
50.	-2.755	-1.00	0.2827E-08	0.5395E-07	0.7201E-07	0.2817E-07	0.1030E-06
50.	-2.505	-0.75	0.2938E-06	0.4329E-05	0.5368E-05	0.2109E-05	0.7770E-05
50.	-2.255	-0.50	0.2317E-05	0.3361E-04	0.4017E-04	0.1591E-04	0.5840E-04
50.	-2.005	-0.25	0.7279E-05	0.1153E-03	0.1346E-03	0.5379E-04	0.1957E-03
50.	-1.755	0.00	0.1391E-04	0.2600E-03	0.2979E-03	0.1207E-03	0.4325E-03
50.	-1.505	0.25	0.1870E-04	0.4505E-03	0.5098E-03	0.2078E-03	0.7363E-03
50.	-1.255	0.50	0.1795E-04	0.6385E-03	0.7144E-03	0.2952E-03	0.1028E-02
50.	-1.005	0.75	0.1051E-04	0.7259E-03	0.8067E-03	0.3398E-03	0.1157E-02
50.	-0.755	1.00	0.1532E-05	0.4600E-03	0.5172E-03	0.2255E-03	0.7442E-03
50.	-0.505	1.25	—	—	—	—	—
60.	-3.005	-1.25	—	—	—	—	—
60.	-2.755	-1.00	0.6395E-10	0.2111E-08	0.2828E-08	0.1214E-08	0.4106E-08
60.	-2.505	-0.75	0.4668E-07	0.1003E-05	0.1222E-05	0.5206E-06	0.1790E-05
60.	-2.255	-0.50	0.5745E-06	0.1198E-04	0.1403E-04	0.5986E-05	0.2059E-04
60.	-2.005	-0.25	0.2163E-05	0.4993E-04	0.5727E-04	0.2444E-04	0.8387E-04
60.	-1.755	0.00	0.4475E-05	0.1256E-03	0.1417E-03	0.6070E-04	0.2069E-03
60.	-1.505	0.25	0.6092E-05	0.2316E-03	0.2582E-03	0.1114E-03	0.3757E-03
60.	-1.255	0.50	0.5455E-05	0.3337E-03	0.3694E-03	0.1603E-03	0.5352E-03
60.	-1.005	0.75	0.2462E-05	0.3485E-03	0.3851E-03	0.1693E-03	0.5568E-03
60.	-0.755	1.00	0.8147E-07	0.9662E-04	0.1108E-03	0.5030E-04	0.1612E-03
60.	-0.505	1.25	—	—	—	—	—
70.	-3.005	-1.25	—	—	—	—	—
70.	-2.755	-1.00	0.2827E-13	0.3814E-11	0.5773E-11	0.2528E-11	0.8329E-11
70.	-2.505	-0.75	0.5380E-08	0.1702E-06	0.2054E-06	0.9408E-07	0.3049E-06
70.	-2.255	-0.50	0.1287E-06	0.3791E-05	0.4389E-05	0.1981E-05	0.6499E-05
70.	-2.005	-0.25	0.6140E-06	0.2017E-04	0.2281E-04	0.1029E-04	0.3372E-04
70.	-1.755	0.00	0.1394E-05	0.5737E-04	0.6389E-04	0.2872E-04	0.9401E-04
70.	-1.505	0.25	0.1903E-05	0.1120E-03	0.1236E-03	0.5555E-04	0.1810E-03
70.	-1.255	0.50	0.1521E-05	0.1592E-03	0.1749E-03	0.7866E-04	0.2550E-03
70.	-1.005	0.75	0.4411E-06	0.1350E-03	0.1493E-03	0.6775E-04	0.2175E-03
70.	-0.755	1.00	0.7911E-10	0.1089E-05	0.1398E-05	0.6421E-06	0.2040E-05
70.	-0.505	1.25	—	—	—	—	—

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved LO	direct LO	direct NLO	DIS LO	total
80.	-3.005	-1.25	—	—	—	—	—
80.	-2.755	-1.00	—	—	—	—	—
80.	-2.505	-0.75	0.3404E-09	0.1686E-07	0.2042E-07	0.9790E-08	0.3055E-07
80.	-2.255	-0.50	0.2422E-07	0.1013E-05	0.1161E-05	0.5515E-06	0.1737E-05
80.	-2.005	-0.25	0.1596E-06	0.7422E-05	0.8298E-05	0.3893E-05	0.1235E-04
80.	-1.755	0.00	0.4057E-06	0.2433E-04	0.2686E-04	0.1254E-04	0.3981E-04
80.	-1.505	0.25	0.5471E-06	0.4989E-04	0.5459E-04	0.2540E-04	0.8053E-04
80.	-1.255	0.50	0.3627E-06	0.6659E-04	0.7286E-04	0.3372E-04	0.1069E-03
80.	-1.005	0.75	0.4606E-07	0.3481E-04	0.3892E-04	0.1812E-04	0.5709E-04
80.	-0.755	1.00	—	—	—	—	—
80.	-0.505	1.25	—	—	—	—	—
90.	-3.005	-1.25	—	—	—	—	—
90.	-2.755	-1.00	—	—	—	—	—
90.	-2.505	-0.75	0.5873E-11	0.5383E-09	0.6715E-09	0.3304E-09	0.1008E-08
90.	-2.255	-0.50	0.3418E-08	0.2091E-06	0.2391E-06	0.1175E-06	0.3600E-06
90.	-2.005	-0.25	0.3601E-07	0.2398E-05	0.2665E-05	0.1291E-05	0.3992E-05
90.	-1.755	0.00	0.1057E-06	0.9331E-05	0.1023E-04	0.4889E-05	0.1523E-04
90.	-1.505	0.25	0.1374E-06	0.1980E-04	0.2160E-04	0.1026E-04	0.3200E-04
90.	-1.255	0.50	0.6639E-07	0.2257E-04	0.2477E-04	0.1174E-04	0.3658E-04
90.	-1.005	0.75	0.1306E-08	0.3321E-05	0.3865E-05	0.1816E-05	0.5682E-05
90.	-0.755	1.00	—	—	—	—	—
90.	-0.505	1.25	—	—	—	—	—
100.	-3.005	-1.25	—	—	—	—	—
100.	-2.755	-1.00	—	—	—	—	—
100.	-2.505	-0.75	0.2497E-16	0.5186E-13	0.9218E-13	0.3944E-13	0.1316E-12
100.	-2.255	-0.50	0.2932E-09	0.2809E-07	0.3237E-07	0.1620E-07	0.4887E-07
100.	-2.005	-0.25	0.6506E-08	0.6394E-06	0.7102E-06	0.3503E-06	0.1067E-05
100.	-1.755	0.00	0.2316E-07	0.3092E-05	0.3384E-05	0.1655E-05	0.5062E-05
100.	-1.505	0.25	0.2786E-07	0.6601E-05	0.7206E-05	0.3494E-05	0.1073E-04
100.	-1.255	0.50	0.7556E-08	0.5267E-05	0.5855E-05	0.2806E-05	0.8669E-05
100.	-1.005	0.75	0.8057E-13	0.2574E-08	0.3565E-08	0.1611E-08	0.5176E-08
100.	-0.755	1.00	—	—	—	—	—
100.	-0.505	1.25	—	—	—	—	—

Table 7: *$d^2\sigma/dp_{t,W}\,dy_W$ (in pb/GeV) in LO and NLO.*

A.2.3 W^+ production in e^+p scattering including NLO at $E_p = 820$ GeV

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved LO	direct LO	direct NLO	DIS LO	total
10.	-2.948	-1.25	0.1812E-07	0.5665E-07	0.1010E-06	0.1650E-07	0.1356E-06
10.	-2.698	-1.00	0.3865E-04	0.6791E-04	0.9051E-04	0.1899E-04	0.1482E-03
10.	-2.448	-0.75	0.3362E-03	0.5431E-03	0.6354E-03	0.1527E-03	0.1124E-02
10.	-2.198	-0.50	0.9483E-03	0.1545E-02	0.1662E-02	0.4429E-03	0.3053E-02
10.	-1.948	-0.25	0.1664E-02	0.2840E-02	0.2890E-02	0.8382E-03	0.5392E-02
10.	-1.698	0.00	0.2251E-02	0.4116E-02	0.4020E-02	0.1258E-02	0.7529E-02
10.	-1.448	0.25	0.2557E-02	0.5124E-02	0.4887E-02	0.1630E-02	0.9074E-02
10.	-1.198	0.50	0.2497E-02	0.5698E-02	0.5355E-02	0.1905E-02	0.9757E-02
10.	-0.948	0.75	0.2028E-02	0.5733E-02	0.5442E-02	0.2047E-02	0.9517E-02
10.	-0.698	1.00	0.1128E-02	0.5027E-02	0.5041E-02	0.2037E-02	0.8206E-02
10.	-0.448	1.25	0.7139E-04	0.2496E-02	0.2871E-02	0.1407E-02	0.4349E-02
20.	-2.948	-1.25	0.5467E-10	0.7573E-09	0.1444E-08	0.3221E-09	0.1821E-08
20.	-2.698	-1.00	0.3438E-05	0.1408E-04	0.2003E-04	0.5156E-05	0.2862E-04
20.	-2.448	-0.75	0.4523E-04	0.1708E-03	0.2231E-03	0.6181E-04	0.3301E-03
20.	-2.198	-0.50	0.1526E-03	0.6100E-03	0.7566E-03	0.2225E-03	0.1132E-02
20.	-1.948	-0.25	0.2948E-03	0.1316E-02	0.1576E-02	0.4897E-03	0.2360E-02
20.	-1.698	0.00	0.4211E-03	0.2162E-02	0.2527E-02	0.8298E-03	0.3778E-02
20.	-1.448	0.25	0.4902E-03	0.2988E-02	0.3421E-02	0.1192E-02	0.5103E-02
20.	-1.198	0.50	0.4756E-03	0.3645E-02	0.4112E-02	0.1529E-02	0.6117E-02
20.	-0.948	0.75	0.3630E-03	0.3997E-02	0.4476E-02	0.1786E-02	0.6625E-02
20.	-0.698	1.00	0.1619E-03	0.3806E-02	0.4270E-02	0.1874E-02	0.6306E-02
20.	-0.448	1.25	0.1027E-05	0.1192E-02	0.1388E-02	0.7735E-03	0.2163E-02
30.	-2.948	-1.25	—	—	—	—	—
30.	-2.698	-1.00	0.3599E-06	0.2834E-05	0.3965E-05	0.1212E-05	0.5537E-05
30.	-2.448	-0.75	0.8375E-05	0.5951E-04	0.7691E-04	0.2488E-04	0.1102E-03
30.	-2.198	-0.50	0.3501E-04	0.2714E-03	0.3351E-03	0.1137E-03	0.4838E-03
30.	-1.948	-0.25	0.7544E-04	0.6852E-03	0.8209E-03	0.2891E-03	0.1185E-02
30.	-1.698	0.00	0.1141E-03	0.1264E-02	0.1477E-02	0.5454E-03	0.2137E-02
30.	-1.448	0.25	0.1357E-03	0.1912E-02	0.2191E-02	0.8516E-03	0.3178E-02
30.	-1.198	0.50	0.1293E-03	0.2506E-02	0.2830E-02	0.1161E-02	0.4120E-02
30.	-0.948	0.75	0.8991E-04	0.2895E-02	0.3236E-02	0.1413E-02	0.4739E-02
30.	-0.698	1.00	0.2877E-04	0.2741E-02	0.3044E-02	0.1444E-02	0.4517E-02
30.	-0.448	1.25	—	—	—	—	—

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved LO	direct LO	direct NLO	DIS LO	total
40.	-2.948	-1.25	—	—	—	—	—
40.	-2.698	-1.00	0.2833E-07	0.3964E-06	0.5436E-06	0.1924E-06	0.7644E-06
40.	-2.448	-0.75	0.1613E-05	0.1927E-04	0.2430E-04	0.8926E-05	0.3484E-04
40.	-2.198	-0.50	0.8909E-05	0.1177E-03	0.1422E-03	0.5431E-04	0.2054E-03
40.	-1.948	-0.25	0.2184E-04	0.3501E-03	0.4107E-03	0.1622E-03	0.5947E-03
40.	-1.698	0.00	0.3519E-04	0.7213E-03	0.8279E-03	0.3376E-03	0.1201E-02
40.	-1.448	0.25	0.4259E-04	0.1182E-02	0.1332E-02	0.5657E-03	0.1940E-02
40.	-1.198	0.50	0.3915E-04	0.1638E-02	0.1823E-02	0.8063E-03	0.2668E-02
40.	-0.948	0.75	0.2367E-04	0.1935E-02	0.2129E-02	0.9893E-03	0.3142E-02
40.	-0.698	1.00	0.4332E-05	0.1605E-02	0.1765E-02	0.8906E-03	0.2660E-02
40.	-0.448	1.25	—	—	—	—	—
50.	-2.948	-1.25	—	—	—	—	—
50.	-2.698	-1.00	0.9850E-09	0.2508E-07	0.3424E-07	0.1374E-07	0.4896E-07
50.	-2.448	-0.75	0.2806E-06	0.5299E-05	0.6543E-05	0.2692E-05	0.9516E-05
50.	-2.198	-0.50	0.2275E-05	0.4739E-04	0.5603E-04	0.2365E-04	0.8195E-04
50.	-1.948	-0.25	0.6545E-05	0.1698E-03	0.1951E-03	0.8458E-04	0.2862E-03
50.	-1.698	0.00	0.1132E-04	0.3918E-03	0.4413E-03	0.1958E-03	0.6484E-03
50.	-1.448	0.25	0.1386E-04	0.6917E-03	0.7667E-03	0.3499E-03	0.1130E-02
50.	-1.198	0.50	0.1201E-04	0.9992E-03	0.1094E-02	0.5137E-03	0.1620E-02
50.	-0.948	0.75	0.5840E-05	0.1155E-02	0.1256E-02	0.6150E-03	0.1877E-02
50.	-0.698	1.00	0.3452E-06	0.6040E-03	0.6708E-03	0.3631E-03	0.1034E-02
50.	-0.448	1.25	—	—	—	—	—
60.	-2.948	-1.25	—	—	—	—	—
60.	-2.698	-1.00	0.2980E-11	0.1911E-09	0.2730E-09	0.1185E-09	0.3944E-09
60.	-2.448	-0.75	0.3817E-07	0.1118E-05	0.1360E-05	0.6153E-06	0.2014E-05
60.	-2.198	-0.50	0.5447E-06	0.1713E-04	0.1987E-04	0.9142E-05	0.2956E-04
60.	-1.948	-0.25	0.1927E-05	0.7690E-04	0.8682E-04	0.4049E-04	0.1292E-03
60.	-1.698	0.00	0.3619E-05	0.2009E-03	0.2228E-03	0.1055E-03	0.3319E-03
60.	-1.448	0.25	0.4447E-05	0.3806E-03	0.4160E-03	0.2009E-03	0.6213E-03
60.	-1.198	0.50	0.3502E-05	0.5616E-03	0.6075E-03	0.2994E-03	0.9104E-03
60.	-0.948	0.75	0.1190E-05	0.5855E-03	0.6327E-03	0.3255E-03	0.9594E-03
60.	-0.698	1.00	0.2384E-08	0.4188E-04	0.5037E-04	0.3008E-04	0.8045E-04
60.	-0.448	1.25	—	—	—	—	—
70.	-2.948	-1.25	—	—	—	—	—
70.	-2.698	-1.00	—	—	—	—	—
70.	-2.448	-0.75	0.3207E-08	0.1510E-06	0.1832E-06	0.8971E-07	0.2761E-06
70.	-2.198	-0.50	0.1138E-06	0.5334E-05	0.6105E-05	0.3016E-05	0.9235E-05
70.	-1.948	-0.25	0.5330E-06	0.3198E-04	0.3558E-04	0.1771E-04	0.5382E-04
70.	-1.698	0.00	0.1106E-05	0.9614E-04	0.1051E-03	0.5244E-04	0.1587E-03
70.	-1.448	0.25	0.1347E-05	0.1947E-03	0.2104E-03	0.1060E-03	0.3177E-03
70.	-1.198	0.50	0.9090E-06	0.2833E-03	0.3043E-03	0.1559E-03	0.4611E-03
70.	-0.948	0.75	0.1617E-06	0.2202E-03	0.2398E-03	0.1297E-03	0.3697E-03
70.	-0.698	1.00	—	—	—	—	—
70.	-0.448	1.25	—	—	—	—	—

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved LO	direct LO	direct NLO	DIS LO	total
80.	-2.948	-1.25	—	—	—	—	—
80.	-2.698	-1.00	—	—	—	—	—
80.	-2.448	-0.75	0.9523E-10	0.8224E-08	0.1019E-07	0.5227E-08	0.1551E-07
80.	-2.198	-0.50	0.1875E-07	0.1331E-05	0.1515E-05	0.7907E-06	0.2324E-05
80.	-1.948	-0.25	0.1315E-06	0.1186E-04	0.1308E-04	0.6804E-05	0.2001E-04
80.	-1.698	0.00	0.3096E-06	0.4212E-04	0.4567E-04	0.2376E-04	0.6974E-04
80.	-1.448	0.25	0.3669E-06	0.9032E-04	0.9697E-04	0.5041E-04	0.1478E-03
80.	-1.198	0.50	0.1912E-06	0.1208E-03	0.1297E-03	0.6901E-04	0.1989E-03
80.	-0.948	0.75	0.8440E-08	0.4069E-04	0.4574E-04	0.2638E-04	0.7213E-04
80.	-0.698	1.00	—	—	—	—	—
80.	-0.448	1.25	—	—	—	—	—
90.	-2.948	-1.25	—	—	—	—	—
90.	-2.698	-1.00	—	—	—	—	—
90.	-2.448	-0.75	0.8817E-13	0.2826E-10	0.3935E-10	0.1985E-10	0.5929E-10
90.	-2.198	-0.50	0.2029E-08	0.2301E-06	0.2630E-06	0.1422E-06	0.4072E-06
90.	-1.948	-0.25	0.2691E-07	0.3721E-05	0.4085E-05	0.2201E-05	0.6312E-05
90.	-1.698	0.00	0.7509E-07	0.1627E-04	0.1754E-04	0.9396E-05	0.2701E-04
90.	-1.448	0.25	0.8369E-07	0.3619E-04	0.3878E-04	0.2075E-04	0.5962E-04
90.	-1.198	0.50	0.2740E-07	0.3823E-04	0.4146E-04	0.2291E-04	0.6439E-04
90.	-0.948	0.75	0.1035E-10	0.4044E-06	0.5169E-06	0.3164E-06	0.8333E-06
90.	-0.698	1.00	—	—	—	—	—
90.	-0.448	1.25	—	—	—	—	—
100.	-2.948	-1.25	—	—	—	—	—
100.	-2.698	-1.00	—	—	—	—	—
100.	-2.448	-0.75	—	—	—	—	—
100.	-2.198	-0.50	0.9560E-10	0.1960E-07	0.2294E-07	0.1262E-07	0.3566E-07
100.	-1.948	-0.25	0.4030E-08	0.8958E-06	0.9874E-06	0.5429E-06	0.1534E-05
100.	-1.698	0.00	0.1443E-07	0.5176E-05	0.5592E-05	0.3063E-05	0.8669E-05
100.	-1.448	0.25	0.1416E-07	0.1139E-04	0.1228E-04	0.6742E-05	0.1903E-04
100.	-1.198	0.50	0.1768E-08	0.6428E-05	0.7177E-05	0.4126E-05	0.1130E-04
100.	-0.948	0.75	—	—	—	—	—
100.	-0.698	1.00	—	—	—	—	—
100.	-0.448	1.25	—	—	—	—	—

Table 8: *$d^2\sigma/dp_{t,W}\,dy_W$ (in pb/GeV) in LO and NLO.*

A.2.4 W^- production in e^+p scattering including NLO at $E_p = 820$ GeV

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved LO	direct LO	direct NLO	DIS LO	total
10.	-2.948	-1.25	0.3004E-08	0.1140E-07	0.2057E-07	0.3341E-08	0.2692E-07
10.	-2.698	-1.00	0.1487E-04	0.2928E-04	0.3954E-04	0.8278E-05	0.6269E-04
10.	-2.448	-0.75	0.1964E-03	0.3295E-03	0.3882E-03	0.9335E-04	0.6779E-03
10.	-2.198	-0.50	0.7325E-03	0.1161E-02	0.1244E-02	0.3320E-03	0.2308E-02
10.	-1.948	-0.25	0.1565E-02	0.2456E-02	0.2467E-02	0.7127E-03	0.4745E-02
10.	-1.698	0.00	0.2420E-02	0.3888E-02	0.3708E-02	0.1144E-02	0.7272E-02
10.	-1.448	0.25	0.2991E-02	0.5083E-02	0.4701E-02	0.1523E-02	0.9215E-02
10.	-1.198	0.50	0.3064E-02	0.5758E-02	0.5228E-02	0.1754E-02	0.1005E-01
10.	-0.948	0.75	0.2540E-02	0.5745E-02	0.5264E-02	0.1808E-02	0.9612E-02
10.	-0.698	1.00	0.1414E-02	0.4799E-02	0.4710E-02	0.1629E-02	0.7753E-02
10.	-0.448	1.25	0.8723E-04	0.1843E-02	0.2199E-02	0.8249E-03	0.3111E-02
20.	-2.948	-1.25	0.7431E-11	0.1202E-09	0.2330E-09	0.5207E-10	0.2925E-09
20.	-2.698	-1.00	0.1205E-05	0.5340E-05	0.7709E-05	0.1970E-05	0.1088E-04
20.	-2.448	-0.75	0.2434E-04	0.8906E-04	0.1178E-03	0.3237E-04	0.1745E-03
20.	-2.198	-0.50	0.1095E-03	0.3816E-03	0.4782E-03	0.1384E-03	0.7261E-03
20.	-1.948	-0.25	0.2600E-03	0.9221E-03	0.1113E-02	0.3352E-03	0.1708E-02
20.	-1.698	0.00	0.4283E-03	0.1622E-02	0.1906E-02	0.5945E-03	0.2929E-02
20.	-1.448	0.25	0.5470E-03	0.2322E-02	0.2673E-02	0.8661E-03	0.4086E-02
20.	-1.198	0.50	0.5600E-03	0.2860E-02	0.3260E-02	0.1079E-02	0.4899E-02
20.	-0.948	0.75	0.4381E-03	0.3085E-02	0.3513E-02	0.1194E-02	0.5145E-02
20.	-0.698	1.00	0.1955E-03	0.2748E-02	0.3168E-02	0.1129E-02	0.4492E-02
20.	-0.448	1.25	0.1080E-05	0.5170E-03	0.6341E-03	0.2745E-03	0.9097E-03
30.	-2.948	-1.25	—	—	—	—	—
30.	-2.698	-1.00	0.1140E-06	0.9377E-06	0.1334E-05	0.4003E-06	0.1848E-05
30.	-2.448	-0.75	0.4160E-05	0.2734E-04	0.3592E-04	0.1135E-04	0.5143E-04
30.	-2.198	-0.50	0.2342E-04	0.1476E-03	0.1854E-03	0.6049E-04	0.2693E-03
30.	-1.948	-0.25	0.6247E-04	0.4109E-03	0.5006E-03	0.1677E-03	0.7308E-03
30.	-1.698	0.00	0.1098E-03	0.8017E-03	0.9546E-03	0.3274E-03	0.1392E-02
30.	-1.448	0.25	0.1442E-03	0.1247E-02	0.1459E-02	0.5133E-03	0.2117E-02
30.	-1.198	0.50	0.1456E-03	0.1642E-02	0.1899E-02	0.6824E-03	0.2727E-02
30.	-0.948	0.75	0.1040E-03	0.1854E-02	0.2129E-02	0.7868E-03	0.3019E-02
30.	-0.698	1.00	0.3304E-04	0.1592E-02	0.1834E-02	0.7121E-03	0.2579E-02
30.	-0.448	1.25	—	—	—	—	—

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved LO	direct LO	direct NLO	DIS LO	total
40.	-2.948	-1.25	—	—	—	—	—
40.	-2.698	-1.00	0.7898E-08	0.1112E-06	0.1550E-06	0.5360E-07	0.2165E-06
40.	-2.448	-0.75	0.7347E-06	0.7832E-05	0.1007E-04	0.3554E-05	0.1435E-04
40.	-2.198	-0.50	0.5540E-05	0.5679E-04	0.6994E-04	0.2526E-04	0.1007E-03
40.	-1.948	-0.25	0.1696E-04	0.1853E-03	0.2221E-03	0.8175E-04	0.3208E-03
40.	-1.698	0.00	0.3198E-04	0.4013E-03	0.4716E-03	0.1760E-03	0.6796E-03
40.	-1.448	0.25	0.4296E-04	0.6725E-03	0.7771E-03	0.2952E-03	0.1115E-02
40.	-1.198	0.50	0.4199E-04	0.9306E-03	0.1064E-02	0.4115E-03	0.1518E-02
40.	-0.948	0.75	0.2602E-04	0.1056E-02	0.1200E-02	0.4752E-03	0.1701E-02
40.	-0.698	1.00	0.4597E-05	0.7402E-03	0.8458E-03	0.3527E-03	0.1203E-02
40.	-0.448	1.25	—	—	—	—	—
50.	-2.948	-1.25	—	—	—	—	—
50.	-2.698	-1.00	0.2288E-09	0.5659E-08	0.7862E-08	0.3049E-08	0.1114E-07
50.	-2.448	-0.75	0.1155E-06	0.1889E-05	0.2379E-05	0.9311E-06	0.3425E-05
50.	-2.198	-0.50	0.1308E-05	0.2041E-04	0.2464E-04	0.9708E-05	0.3565E-04
50.	-1.948	-0.25	0.4751E-05	0.8034E-04	0.9445E-04	0.3762E-04	0.1368E-03
50.	-1.698	0.00	0.9686E-05	0.1944E-03	0.2243E-03	0.9027E-04	0.3243E-03
50.	-1.448	0.25	0.1322E-04	0.3491E-03	0.3974E-03	0.1615E-03	0.5721E-03
50.	-1.198	0.50	0.1219E-04	0.4977E-03	0.5611E-03	0.2308E-03	0.8040E-03
50.	-0.948	0.75	0.6017E-05	0.5361E-03	0.6029E-03	0.2526E-03	0.8615E-03
50.	-0.698	1.00	0.3140E-06	0.2022E-03	0.2334E-03	0.1029E-03	0.3366E-03
50.	-0.448	1.25	—	—	—	—	—
60.	-2.948	-1.25	—	—	—	—	—
60.	-2.698	-1.00	0.5091E-12	0.3086E-10	0.4479E-10	0.1865E-10	0.6395E-10
60.	-2.448	-0.75	0.1385E-07	0.3427E-06	0.4256E-06	0.1801E-06	0.6196E-06
60.	-2.198	-0.50	0.2862E-06	0.6560E-05	0.7779E-05	0.3288E-05	0.1135E-04
60.	-1.948	-0.25	0.1298E-05	0.3262E-04	0.3771E-04	0.1601E-04	0.5502E-04
60.	-1.698	0.00	0.2898E-05	0.8927E-04	0.1014E-03	0.4323E-04	0.1475E-03
60.	-1.448	0.25	0.3985E-05	0.1708E-03	0.1919E-03	0.8220E-04	0.2781E-03
60.	-1.198	0.50	0.3327E-05	0.2443E-03	0.2723E-03	0.1175E-03	0.3932E-03
60.	-0.948	0.75	0.1119E-05	0.2246E-03	0.2513E-03	0.1104E-03	0.3629E-03
60.	-0.698	1.00	0.1398E-08	0.7777E-05	0.9687E-05	0.4396E-05	0.1408E-04
60.	-0.448	1.25	—	—	—	—	—
70.	-2.948	-1.25	—	—	—	—	—
70.	-2.698	-1.00	—	—	—	—	—
70.	-2.448	-0.75	0.9834E-09	0.3833E-07	0.4756E-07	0.2144E-07	0.6999E-07
70.	-2.198	-0.50	0.5376E-07	0.1794E-05	0.2103E-05	0.9424E-06	0.3099E-05
70.	-1.948	-0.25	0.3297E-06	0.1209E-04	0.1379E-04	0.6168E-05	0.2029E-04
70.	-1.698	0.00	0.8208E-06	0.3812E-04	0.4281E-04	0.1904E-04	0.6267E-04
70.	-1.448	0.25	0.1121E-05	0.7718E-04	0.8582E-04	0.3822E-04	0.1252E-03
70.	-1.198	0.50	0.7941E-06	0.1058E-03	0.1174E-03	0.5263E-04	0.1709E-03
70.	-0.948	0.75	0.1318E-06	0.6617E-04	0.7469E-04	0.3373E-04	0.1086E-03
70.	-0.698	1.00	—	—	—	—	—
70.	-0.448	1.25	—	—	—	—	—

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	resolved LO	direct LO	direct NLO	DIS LO	total
80.	-2.948	-1.25	—	—	—	—	—
80.	-2.698	-1.00	—	—	—	—	—
80.	-2.448	-0.75	0.2296E-10	0.1616E-08	0.2051E-08	0.9571E-09	0.3031E-08
80.	-2.198	-0.50	0.7756E-08	0.3845E-06	0.4486E-06	0.2089E-06	0.6653E-06
80.	-1.948	-0.25	0.7353E-07	0.3950E-05	0.4478E-05	0.2077E-05	0.6629E-05
80.	-1.698	0.00	0.2101E-06	0.1474E-04	0.1645E-04	0.7569E-05	0.2423E-04
80.	-1.448	0.25	0.2790E-06	0.3117E-04	0.3451E-04	0.1583E-04	0.5062E-04
80.	-1.198	0.50	0.1492E-06	0.3768E-04	0.4185E-04	0.1924E-04	0.6124E-04
80.	-0.948	0.75	0.5310E-08	0.8641E-05	0.1006E-04	0.4648E-05	0.1471E-04
80.	-0.698	1.00	—	—	—	—	—
80.	-0.448	1.25	—	—	—	—	—
90.	-2.948	-1.25	—	—	—	—	—
90.	-2.698	-1.00	—	—	—	—	—
90.	-2.448	-0.75	0.1383E-13	0.3726E-11	0.5317E-11	0.2420E-11	0.7751E-11
90.	-2.198	-0.50	0.7068E-09	0.5512E-07	0.6474E-07	0.3112E-07	0.9656E-07
90.	-1.948	-0.25	0.1329E-07	0.1071E-05	0.1210E-05	0.5741E-06	0.1797E-05
90.	-1.698	0.00	0.4570E-07	0.4943E-05	0.5494E-05	0.2598E-05	0.8138E-05
90.	-1.448	0.25	0.5677E-07	0.1064E-04	0.1178E-04	0.5539E-05	0.1738E-04
90.	-1.198	0.50	0.1818E-07	0.9538E-05	0.1070E-04	0.5022E-05	0.1574E-04
90.	-0.948	0.75	0.3458E-11	0.4489E-07	0.5916E-07	0.2685E-07	0.8601E-07
90.	-0.698	1.00	—	—	—	—	—
90.	-0.448	1.25	—	—	—	—	—
100.	-2.948	-1.25	—	—	—	—	—
100.	-2.698	-1.00	—	—	—	—	—
100.	-2.448	-0.75	—	—	—	—	—
100.	-2.198	-0.50	0.2633E-10	0.3671E-08	0.4416E-08	0.2135E-08	0.6577E-08
100.	-1.948	-0.25	0.1703E-08	0.2165E-06	0.2457E-06	0.1189E-06	0.3663E-06
100.	-1.698	0.00	0.7662E-08	0.1333E-05	0.1487E-05	0.7113E-06	0.2206E-05
100.	-1.448	0.25	0.8264E-08	0.2767E-05	0.3084E-05	0.1472E-05	0.4564E-05
100.	-1.198	0.50	0.9123E-09	0.1192E-05	0.1378E-05	0.6493E-06	0.2028E-05
100.	-0.948	0.75	—	—	—	—	—
100.	-0.698	1.00	—	—	—	—	—
100.	-0.448	1.25	—	—	—	—	—

Table 9: *$d^2\sigma/dp_{t,W}\,dy_W$ (in pb/GeV) in LO and NLO.*

A.2.5 $W^{\pm}$ production in e^-p scattering at $E_p = 920$ GeV

In e^-p scattering the results for resolved and direct photoproduction are identical to those of e^+p scattering, while the DIS results are different:

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	DIS LO: W^+ production	DIS LO: W^- production
10.	-3.005	-1.25	0.3420E-06	0.9027E-07
10.	-2.755	-1.00	0.3762E-04	0.1820E-04
10.	-2.505	-0.75	0.2142E-03	0.1411E-03
10.	-2.255	-0.50	0.5454E-03	0.4350E-03
10.	-2.005	-0.25	0.9589E-03	0.8715E-03
10.	-1.755	0.00	0.1383E-02	0.1349E-02
10.	-1.505	0.25	0.1733E-02	0.1756E-02
10.	-1.255	0.50	0.1961E-02	0.2016E-02
10.	-1.005	0.75	0.2047E-02	0.2094E-02
10.	-0.755	1.00	0.1966E-02	0.1956E-02
10.	-0.505	1.25	0.1502E-02	0.1371E-02
20.	-3.005	-1.25	0.3355E-07	0.7616E-08
20.	-2.755	-1.00	0.1202E-04	0.5075E-05
20.	-2.505	-0.75	0.9451E-04	0.5322E-04
20.	-2.255	-0.50	0.2886E-03	0.1929E-03
20.	-2.005	-0.25	0.5812E-03	0.4328E-03
20.	-1.755	0.00	0.9301E-03	0.7368E-03
20.	-1.505	0.25	0.1276E-02	0.1043E-02
20.	-1.255	0.50	0.1567E-02	0.1304E-02
20.	-1.005	0.75	0.1755E-02	0.1464E-02
20.	-0.755	1.00	0.1773E-02	0.1464E-02
20.	-0.505	1.25	0.1288E-02	0.9484E-03
30.	-3.005	-1.25	0.9148E-09	0.1647E-09
30.	-2.755	-1.00	0.3540E-05	0.1310E-05
30.	-2.505	-0.75	0.4188E-04	0.2064E-04
30.	-2.255	-0.50	0.1568E-03	0.9077E-04
30.	-2.005	-0.25	0.3606E-03	0.2305E-03
30.	-1.755	0.00	0.6351E-03	0.4291E-03
30.	-1.505	0.25	0.9401E-03	0.6563E-03
30.	-1.255	0.50	0.1217E-02	0.8734E-03
30.	-1.005	0.75	0.1419E-02	0.1031E-02
30.	-0.755	1.00	0.1434E-02	0.1036E-02
30.	-0.505	1.25	0.5798E-03	0.3126E-03

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	DIS LO: W^+ production	DIS LO: W^- production
40.	-3.005	-1.25	—	—
40.	-2.755	-1.00	0.8133E-06	0.2612E-06
40.	-2.505	-0.75	0.1708E-04	0.7477E-05
40.	-2.255	-0.50	0.8089E-04	0.4150E-04
40.	-2.005	-0.25	0.2134E-03	0.1206E-03
40.	-1.755	0.00	0.4127E-03	0.2463E-03
40.	-1.505	0.25	0.6501E-03	0.4047E-03
40.	-1.255	0.50	0.8802E-03	0.5641E-03
40.	-1.005	0.75	0.1037E-02	0.6783E-03
40.	-0.755	1.00	0.9832E-03	0.6271E-03
40.	-0.505	1.25	—	—
50.	-3.005	-1.25	—	—
50.	-2.755	-1.00	0.1174E-06	0.3194E-07
50.	-2.505	-0.75	0.6064E-05	0.2369E-05
50.	-2.255	-0.50	0.3852E-04	0.1789E-04
50.	-2.005	-0.25	0.1190E-03	0.6070E-04
50.	-1.755	0.00	0.2518E-03	0.1369E-03
50.	-1.505	0.25	0.4200E-03	0.2388E-03
50.	-1.255	0.50	0.5867E-03	0.3446E-03
50.	-1.005	0.75	0.6811E-03	0.4070E-03
50.	-0.755	1.00	0.5280E-03	0.2902E-03
50.	-0.505	1.25	—	—
60.	-3.005	-1.25	—	—
60.	-2.755	-1.00	0.6581E-08	0.1436E-08
60.	-2.505	-0.75	0.1771E-05	0.6156E-06
60.	-2.255	-0.50	0.1676E-04	0.7066E-05
60.	-2.005	-0.25	0.6172E-04	0.2892E-04
60.	-1.755	0.00	0.1444E-03	0.7247E-04
60.	-1.505	0.25	0.2541E-03	0.1337E-03
60.	-1.255	0.50	0.3590E-03	0.1965E-03
60.	-1.005	0.75	0.3934E-03	0.2151E-03
60.	-0.755	1.00	0.1650E-03	0.7149E-04
60.	-0.505	1.25	—	—
70.	-3.005	-1.25	—	—
70.	-2.755	-1.00	0.2029E-10	0.3163E-11
70.	-2.505	-0.75	0.3822E-06	0.1171E-06
70.	-2.255	-0.50	0.6393E-05	0.2466E-05
70.	-2.005	-0.25	0.2938E-04	0.1282E-04
70.	-1.755	0.00	0.7672E-04	0.3600E-04
70.	-1.505	0.25	0.1426E-03	0.7063E-04
70.	-1.255	0.50	0.2000E-03	0.1020E-03
70.	-1.005	0.75	0.1878E-03	0.9244E-04
70.	-0.755	1.00	0.4243E-05	0.1051E-05
70.	-0.505	1.25	—	—

$p_{t,W}$ (GeV)	$y_{W,lab}$	$y_{W,cms}$	DIS LO: W^+ production	DIS LO: W^- production
80.	-3.005	-1.25	—	—
80.	-2.755	-1.00	—	—
80.	-2.505	-0.75	0.4970E-07	0.1302E-07
80.	-2.255	-0.50	0.2066E-05	0.7305E-06
80.	-2.005	-0.25	0.1273E-04	0.5169E-05
80.	-1.755	0.00	0.3776E-04	0.1672E-04
80.	-1.505	0.25	0.7347E-04	0.3424E-04
80.	-1.255	0.50	0.9855E-04	0.4680E-04
80.	-1.005	0.75	0.6363E-04	0.2688E-04
80.	-0.755	1.00	—	—
80.	-0.505	1.25	—	—
90.	-3.005	-1.25	—	—
90.	-2.755	-1.00	—	—
90.	-2.505	-0.75	0.2200E-08	0.4673E-09
90.	-2.255	-0.50	0.5207E-06	0.1661E-06
90.	-2.005	-0.25	0.4825E-05	0.1828E-05
90.	-1.755	0.00	0.1674E-04	0.6990E-05
90.	-1.505	0.25	0.3365E-04	0.1479E-04
90.	-1.255	0.50	0.4011E-04	0.1745E-04
90.	-1.005	0.75	0.9159E-05	0.2977E-05
90.	-0.755	1.00	—	—
90.	-0.505	1.25	—	—
100.	-3.005	-1.25	—	—
100.	-2.755	-1.00	—	—
100.	-2.505	-0.75	0.6625E-12	0.5935E-13
100.	-2.255	-0.50	0.8649E-07	0.2458E-07
100.	-2.005	-0.25	0.1516E-05	0.5324E-06
100.	-1.755	0.00	0.6432E-05	0.2518E-05
100.	-1.505	0.25	0.1313E-04	0.5396E-05
100.	-1.255	0.50	0.1178E-04	0.4517E-05
100.	-1.005	0.75	0.1757E-07	0.2937E-08
100.	-0.755	1.00	—	—
100.	-0.505	1.25	—	—

Table 10: $d^2\sigma/dp_{t,W}\,dy_W$ *(in pb/GeV) in LO.*

B Cross Section for $p_{t,W} < 5\,\mathrm{GeV}$

The cross sections for $p_{t,W} < 5\,\mathrm{GeV}$ are presented for the individual W production processes as calculated in Eqs. (2,3) and $\sigma_{res}^{LO}(p_{t,W} < 5\,\mathrm{GeV}) = \sigma_{res}^{LO}(\mathrm{total})$[6]. We give the LO and NLO results for proton beam energies of $E_p = 820$ GeV and $E_p = 920$ GeV (and electron/positron beam energies of $E_e = 27.5$ GeV). The ACFGP [5] parton densities are chosen for the photon. All other settings and numerical values of parameters are as in [3].

B.1 Cross Section for $p_{t,W} < 5\,\mathrm{GeV}$ in LO

For the proton CTEQ4L densities [6] are used with LO strong coupling ($\Lambda_5^{(LO)} = 181\,\mathrm{MeV}$). The following values can be used for consistency checks in LO.

B.1.1 e^+p scattering

charge of W	E_p (GeV)	resolved	direct	DIS	total
+	920	0.2286	-0.1669	0.0178	0.0794
–	920	0.2746	-0.2080	0.0196	0.0861
+	820	0.1964	-0.1433	0.0153	0.0683
–	820	0.2344	-0.1776	0.0167	0.0735

Table 11: $\sigma(p_{t,W} < 5\,\mathrm{GeV})$ *(in pb) in LO.*

B.1.2 e^-p scattering

In e^-p scattering the results for resolved and direct photoproduction are identical to those of e^+p scattering, while the DIS results are different:

charge of W	E_p (GeV)	DIS
+	920	0.0171
–	920	0.0196

Table 12: $\sigma(p_{t,W} < 5\,\mathrm{GeV})$ *(in pb) in LO.*

B.2 Cross Section for $p_{t,W} < 5\,\mathrm{GeV}$ including NLO corrections

For the proton CTEQ4M densities [6] are used with NLO strong coupling ($\Lambda_5^{(\overline{\mathrm{MS}})} = 202$ MeV). The latter is also used for the following LO cross sections. The total sum

[6] See left diagram in Fig. 3.

is given as the sum of the resolved NLO, direct LO and DIS LO part. The following values should be used for the reweighting according to Eqs. (4,6).

B.2.1 e^+p scattering

charge of W	E_p (GeV)	resolved LO	resolved NLO	direct LO	DIS LO	total
+	920	0.2326	0.3435	-0.1708	0.0181	0.1908
–	920	0.2804	0.4173	-0.2133	0.0200	0.2240
+	820	0.1990	0.2952	-0.1459	0.0156	0.1649
–	820	0.2384	0.3567	-0.1813	0.0170	0.1924

Table 13: $\sigma(p_{t,W} < 5\,\text{GeV})$ *(in pb) in LO and NLO.*

B.2.2 e^-p scattering

In e^-p scattering the results for resolved and direct photoproduction are identical to those of e^+p scattering, while the DIS results are different:

charge of W	E_p (GeV)	DIS LO
+	920	0.0174
–	920	0.0201

Table 14: $\sigma(p_{t,W} < 5\,\text{GeV})$ *(in pb) in LO and NLO.*

References

[1] P. Nason, R. Rückl and M. Spira, Proceedings of the 3rd UK Phenomenology Workshop on HERA Physics, Durham, 1998, J. Phys. **G25** (1999) 1434.

[2] M. Spira, Proceedings "Workshop on Monte Carlo Generators for HERA Physics", Hamburg, 1998, hep-ph/9905469.

[3] K.–P.O. Diener, C. Schwanenberger and M. Spira, Eur. Phys. J. C **25** (2002) 405.

[4] U. Baur, J.A.M. Vermaseren and D. Zeppenfeld, Nucl. Phys. **B375** (1992) 3.

[5] P. Aurenche, P. Chiappetta, M. Fontannaz, J.P. Guillet and E. Pilon, Z. Phys. **C56** (1992) 589.

[6] H.L. Lai, J. Huston, S. Kuhlmann, F. Olness, J. Owens, D. Soper, W.K. Tung and H. Weerts, Phys. Rev. **D55** (1997) 1280.