

**Erratum: Cross sections for the production of high-mass muon pairs
from 800 GeV proton bombardment of ^2H
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We present corrected cross sections for dimuon production from 800 GeV proton bombardment of ^2H from Fermilab experiment 772 (E772) [1]. Table I lists the scaling form of the cross section for the Drell-Yan (DY) process [2]:

$$M^3 \frac{d^2\sigma}{dM dx_F} = \frac{8\pi\alpha^2}{9} \frac{x_1 x_2}{x_1 + x_2} \times \sum_i e_i^2 [q_i(x_1)\bar{q}_i(x_2) + \bar{q}_i(x_1)q_i(x_2)], \quad (1)$$

where α is the fine-structure constant, e_i the electric charge of a quark or antiquark of flavor i , and q_i ($\bar{q}_i$) are the quark (antiquark) structure functions. The kinematics of the DY process also lead to the relations

$$M^2/s = x_1 x_2, \quad x_F = x_1 - x_2. \quad (2)$$

These values differ from those of Ref. [1] significantly only for large values of x_F and small values of mass (M). The cross sections reported in Ref. [1] were too large in this region, due to an error in the Monte Carlo calculation of the acceptance. This was discovered in analyzing the DY angular distribution data from E772 [3]. New acceptance calculations have been performed, decreasing cross sections in this

region by a factor of up to two. The DY events in this region are on the falling edge of the spectrometer's acceptance.

Further Monte Carlo studies show that the systematic error of the cross sections, due to uncertainties in the magnetic field maps and hodoscope alignment, is larger than the $\sim 10\%$ quoted in Ref. [1] for the lowest mass dimuons. We now quote a total systematic normalization error of $\sim 10\%$ for all of the cross sections plus an additional $\sim 10\%$ point-to-point systematic error for the mass region below 6 GeV.

In the original publication [1], the table for the invariant form of the DY cross section (Table II) contained a numerical mistake, as well as a mislabeling (nb/GeV²/nucleon rather than pb/GeV²/nucleon). This resulted in cross sections that were too small by a p_t dependent factor ranging from ≈ 3 to ≈ 5 . Table II gives the correct p_t dependence in terms of

$$E \frac{d^3\sigma}{dp^3} = \frac{2E}{\pi\sqrt{s}} \frac{d^2\sigma}{dp_t^2 dx_F}. \quad (3)$$

Finally, we note that the corrections presented here do not affect the nuclear dependence ratios presented in earlier publications [4].

TABLE I. Scaling form of the Drell-Yan cross section, $m^3 d^2\sigma/dm dx_F$ in nb $\times$ GeV²/nucleon. Only statistical errors are listed. See text for discussion of systematic errors.

Mass (GeV)	$x_F=0.025$	Error	$x_F=0.075$	Error
4.75	0.214×10^2	0.173×10	0.213×10^2	0.109×10
5.25	0.192×10^2	0.143×10	0.172×10^2	0.913
5.75	0.170×10^2	0.134×10	0.135×10^2	0.653
6.25	0.939×10	0.647	0.108×10^2	0.511
6.75	0.751×10	0.551	0.874×10	0.452
7.25	0.572×10	0.477	0.822×10	0.474
7.75	0.689×10	0.590	0.496×10	0.314
8.25	0.355×10	0.350	0.414×10	0.296
8.75	0.340×10	0.330	0.363×10	0.281
11.25	0.167×10	0.419	0.126×10	0.301
11.75	0.928	0.325	0.706	0.193
12.25	0.600	0.266	0.286	0.126
12.75	0.308	0.231	0.897	0.387
13.25	0.463	0.293	0.543	0.273

TABLE I. (*Continued*)

Mass (GeV)	$x_F=0.125$	Error	$x_F=0.175$	Error
4.75	0.183×10^2	0.839	0.172×10^2	0.795
5.25	0.162×10^2	0.632	0.146×10^2	0.469
5.75	0.124×10^2	0.460	0.115×10^2	0.368
6.25	0.106×10^2	0.403	0.987×10	0.340
6.75	0.848×10	0.368	0.781×10	0.298
7.25	0.731×10	0.341	0.706×10	0.303
7.75	0.601×10	0.323	0.498×10	0.246
8.25	0.479×10	0.288	0.433×10	0.238
8.75	0.404×10	0.278	0.402×10	0.253
11.25	0.144×10	0.238	0.720	0.163
11.75	0.840	0.216	0.386	0.101
12.25	0.527	0.176	0.454	0.120
12.75	0.406	0.153	0.597	0.183
13.25	0.381	0.189	0.996×10^{-1}	0.609×10^{-1}
13.75	0.225	0.174	0.779×10^{-1}	0.494×10^{-1}
14.25	0.394	0.306	0.147	0.109
14.75	0.173	0.132	0.283	0.161
Mass (GeV)	$x_F=0.225$	Error	$x_F=0.275$	Error
4.75	0.141×10^2	0.795	0.123×10^2	0.862
5.25	0.134×10^2	0.401	0.114×10^2	0.363
5.75	0.108×10^2	0.334	0.992×10	0.330
6.25	0.837×10	0.284	0.722×10	0.258
6.75	0.663×10	0.254	0.567×10	0.219
7.25	0.659×10	0.279	0.500×10	0.218
7.75	0.501×10	0.233	0.423×10	0.212
8.25	0.412×10	0.219	0.375×10	0.204
8.75	0.375×10	0.226	0.318×10	0.200
11.25	0.116×10	0.190	0.102×10	0.150
11.75	0.745	0.153	0.744	0.139
12.25	0.360	0.956×10^{-1}	0.322	0.814×10^{-1}
12.75	0.461	0.151	0.568	0.181
13.25	0.530	0.199	0.331	0.141
13.75	0.217	0.973×10^{-1}	0.104	0.768×10^{-1}
14.25	0.120	0.946×10^{-1}	0.169	0.102
14.75	0.204	0.133	0.000	0.000
Mass (GeV)	$x_F=0.325$	Error	$x_F=0.375$	Error
4.75	0.874×10	0.787	0.762×10	0.990
5.25	0.112×10^2	0.419	0.854×10	0.402
5.75	0.816×10	0.310	0.644×10	0.288
6.25	0.680×10	0.271	0.562×10	0.260
6.75	0.568×10	0.250	0.425×10	0.215
7.25	0.482×10	0.231	0.350×10	0.196
7.75	0.415×10	0.217	0.349×10	0.203
8.25	0.303×10	0.182	0.235×10	0.151
8.75	0.278×10	0.189	0.207×10	0.151
11.25	0.613	0.111	0.592	0.107
11.75	0.598	0.106	0.360	0.763×10^{-1}
12.25	0.381	0.872×10^{-1}	0.260	0.671×10^{-1}
12.75	0.319	0.843×10^{-1}	0.330	0.913×10^{-1}
13.25	0.153	0.580×10^{-1}	0.254	0.979×10^{-1}
13.75	0.612×10^{-1}	0.416×10^{-1}	0.234	0.108
14.25	0.718	0.379	0.000	0.000

TABLE I. (*Continued*)

Mass (GeV)	$x_F=0.425$	Error	$x_F=0.475$	Error
4.75	0.782×10	0.142×10	0.471×10	0.148×10
5.25	0.720×10	0.436	0.596×10	0.527
5.75	0.579×10	0.322	0.504×10	0.364
6.25	0.477×10	0.268	0.330×10	0.223
6.75	0.373×10	0.215	0.276×10	0.207
7.25	0.263×10	0.169	0.215×10	0.159
7.75	0.229×10	0.156	0.170×10	0.136
8.25	0.237×10	0.178	0.148×10	0.136
8.75	0.207×10	0.167	0.139×10	0.140
11.25	0.351	0.662×10^{-1}	0.267	0.563×10^{-1}
11.75	0.361	0.936×10^{-1}	0.406	0.100
12.25	0.278	0.706×10^{-1}	0.188	0.562×10^{-1}
12.75	0.298	0.895×10^{-1}	0.204	0.721×10^{-1}
13.25	0.207	0.962×10^{-1}	0.117	0.686×10^{-1}
13.75	0.720×10^{-1}	0.402×10^{-1}	0.857×10^{-1}	0.469×10^{-1}
14.25	0.133	0.835×10^{-1}	0.000	0.000
14.75	0.298	0.255	0.725×10^{-1}	0.624×10^{-1}
15.75	0.113	0.875×10^{-1}	0.000	0.000
Mass (GeV)	$x_F=0.525$	Error	$x_F=0.575$	Error
5.25	0.440×10	0.495	0.268×10	0.604
5.75	0.380×10	0.350	0.319×10	0.426
6.25	0.217×10	0.186	0.164×10	0.167
6.75	0.201×10	0.167	0.160×10	0.196
7.25	0.175×10	0.163	0.108×10	0.127
7.75	0.116×10	0.119	0.883	0.109
8.25	0.853	0.987×10^{-1}	0.662	0.854×10^{-1}
8.75	0.927	0.112	0.495	0.795×10^{-1}
11.25	0.291	0.743×10^{-1}	0.399×10^{-1}	0.231×10^{-1}
11.75	0.367	0.106	0.542×10^{-1}	0.335×10^{-1}
12.25	0.145	0.725×10^{-1}	0.853×10^{-1}	0.393×10^{-1}
12.75	0.804×10^{-1}	0.508×10^{-1}	0.448×10^{-1}	0.314×10^{-1}
13.25	0.709×10^{-1}	0.362×10^{-1}	0.805×10^{-1}	0.643×10^{-1}
13.75	0.802×10^{-1}	0.511×10^{-1}	0.618×10^{-1}	0.385×10^{-1}
14.25	0.643×10^{-1}	0.471×10^{-1}	0.000	0.000
14.75	0.173	0.128	0.000	0.000
Mass (GeV)	$x_F=0.625$	Error	$x_F=0.675$	Error
5.25	0.117×10	0.387	0.737	0.413
5.75	0.223×10	0.417	0.253	0.126
6.25	0.926	0.141	0.920	0.246
6.75	0.800	0.114	0.362	0.872×10^{-1}
7.25	0.695	0.124	0.607	0.148
7.75	0.560	0.992×10^{-1}	0.186	0.442×10^{-1}
8.25	0.342	0.703×10^{-1}	0.267	0.769×10^{-1}
8.75	0.304	0.823×10^{-1}	0.952×10^{-1}	0.444×10^{-1}
11.25	0.575×10^{-1}	0.310×10^{-1}	0.600×10^{-1}	0.383×10^{-1}
11.75	0.675×10^{-1}	0.408×10^{-1}	0.000	0.000
12.25	0.225	0.156	0.333×10^{-1}	0.302×10^{-1}
13.25	0.716×10^{-1}	0.529×10^{-1}	0.000	0.000

TABLE II. Invariant cross section in pb/GeV²/nucleon for 1 GeV wide mass bins. Cross sections correspond to the range $0.1 \leq x_F \leq 0.3$. Only statistical errors are listed. See text for discussion of systematic errors.

p_t (GeV)	Mass=5.5 GeV	Error	Mass=6.5 GeV	Error
0.125	0.675×10	0.305	0.287×10	0.153
0.375	0.559×10	0.156	0.228×10	0.765×10^{-1}
0.625	0.484×10	0.122	0.208×10	0.625×10^{-1}
0.875	0.350×10	0.903×10^{-1}	0.135×10	0.413×10^{-1}
1.125	0.256×10	0.768×10^{-1}	0.105×10	0.356×10^{-1}
1.375	0.178×10	0.672×10^{-1}	0.669	0.275×10^{-1}
1.625	0.112×10	0.535×10^{-1}	0.397	0.203×10^{-1}
1.875	0.817	0.627×10^{-1}	0.262	0.172×10^{-1}
2.125	0.259	0.298×10^{-1}	0.213	0.202×10^{-1}
2.375	0.346	0.575×10^{-1}	0.117	0.150×10^{-1}
2.625	0.147	0.345×10^{-1}	0.979×10^{-1}	0.215×10^{-1}
2.875	0.457×10^{-1}	0.154×10^{-1}	0.376×10^{-1}	0.908×10^{-2}
3.125	0.000	0.000	0.229×10^{-1}	0.789×10^{-2}
3.375	0.000	0.000	0.345×10^{-1}	0.425×10^{-1}
3.625	0.000	0.000	0.106×10^{-1}	0.886×10^{-2}
3.875	0.000	0.000	0.501×10^{-3}	0.432×10^{-3}
p_t (GeV)	Mass=7.5 GeV	Error	Mass=8.5 GeV	Error
0.125	0.168×10	0.120	0.755	0.752×10^{-1}
0.375	0.116×10	0.510×10^{-1}	0.639	0.367×10^{-1}
0.625	0.970	0.362×10^{-1}	0.453	0.229×10^{-1}
0.875	0.730	0.278×10^{-1}	0.387	0.192×10^{-1}
1.125	0.534	0.224×10^{-1}	0.239	0.131×10^{-1}
1.375	0.357	0.177×10^{-1}	0.172	0.105×10^{-1}
1.625	0.222	0.140×10^{-1}	0.120	0.867×10^{-2}
1.875	0.130	0.997×10^{-2}	0.743×10^{-1}	0.701×10^{-2}
2.125	0.839×10^{-1}	0.893×10^{-2}	0.434×10^{-1}	0.555×10^{-2}
2.375	0.494×10^{-1}	0.709×10^{-2}	0.199×10^{-1}	0.343×10^{-2}
2.625	0.340×10^{-1}	0.679×10^{-2}	0.102×10^{-1}	0.249×10^{-2}
2.875	0.295×10^{-1}	0.950×10^{-2}	0.700×10^{-2}	0.249×10^{-2}
3.125	0.844×10^{-2}	0.317×10^{-2}	0.323×10^{-2}	0.248×10^{-2}
3.375	0.573×10^{-2}	0.376×10^{-2}	0.666×10^{-2}	0.597×10^{-2}
p_t (GeV)	Mass=11.5 GeV	Error	Mass=12.5 GeV	Error
0.125	0.868×10^{-1}	0.294×10^{-1}	0.292×10^{-1}	0.215×10^{-1}
0.375	0.916×10^{-1}	0.169×10^{-1}	0.184×10^{-1}	0.683×10^{-2}
0.625	0.378×10^{-1}	0.769×10^{-2}	0.291×10^{-1}	0.777×10^{-2}
0.875	0.373×10^{-1}	0.644×10^{-2}	0.272×10^{-1}	0.603×10^{-2}
1.125	0.359×10^{-1}	0.541×10^{-2}	0.209×10^{-1}	0.456×10^{-2}
1.375	0.155×10^{-1}	0.342×10^{-2}	0.726×10^{-2}	0.208×10^{-2}
1.625	0.111×10^{-1}	0.250×10^{-2}	0.700×10^{-2}	0.255×10^{-2}
1.875	0.945×10^{-2}	0.246×10^{-2}	0.187×10^{-2}	0.880×10^{-3}
2.125	0.506×10^{-2}	0.158×10^{-2}	0.209×10^{-2}	0.147×10^{-2}
2.375	0.172×10^{-2}	0.821×10^{-3}	0.181×10^{-2}	0.127×10^{-2}
2.625	0.145×10^{-2}	0.876×10^{-3}	0.259×10^{-2}	0.205×10^{-2}
p_t (GeV)	Mass=13.5 GeV	Error	Mass=14.5 GeV	Error
0.125	0.228×10^{-1}	0.178×10^{-1}	0.153×10^{-1}	0.207×10^{-1}
0.375	0.669×10^{-2}	0.368×10^{-2}	0.793×10^{-2}	0.509×10^{-2}
0.625	0.449×10^{-2}	0.235×10^{-2}	0.000	0.000
0.875	0.991×10^{-2}	0.434×10^{-2}	0.756×10^{-2}	0.388×10^{-2}
1.125	0.656×10^{-2}	0.335×10^{-2}	0.292×10^{-2}	0.172×10^{-2}
1.375	0.540×10^{-2}	0.228×10^{-2}	0.698×10^{-2}	0.710×10^{-2}
1.625	0.931×10^{-3}	0.623×10^{-3}	0.273×10^{-2}	0.183×10^{-2}

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