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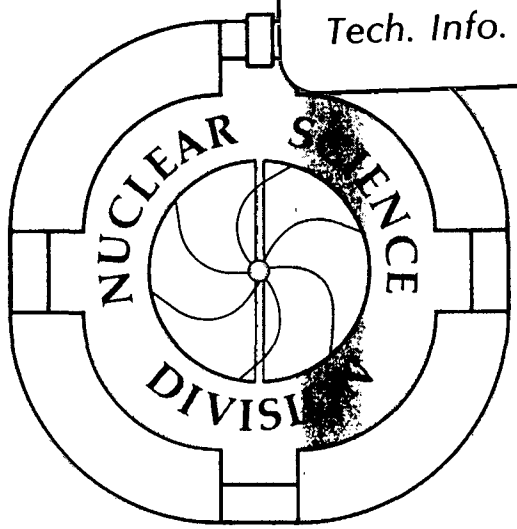

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ABSTRACT

Tables of differential cross sections are presented for the elastic and inelastic scattering of ^{12}C by ^{12}C at 11 energies between 120 and 290 MeV (lab).

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1. INTRODUCTION

This report presents tables of differential cross sections for $^{12}C + ^{12}C$ elastic and inelastic scattering measured at the LBL 88-Inch Cyclotron over the period May 1980 to May 1981. The measurements were made primarily in order to deduce reaction cross sections, $\sigma_R(E)$, and total cross sections, $\sigma_T(E)$ (see Ref. 1.). For this reason emphasis was placed on measurement of the forward angles in contrast with earlier experiments at lower energies (Ref. 2) where a larger angular range was covered. The data are summarized in Table 1 and tabulated in Table 2. The experimental methods are described briefly in Section 2. Copies of this report may be obtained from R. G. Stokstad.

2. EXPERIMENTAL METHODS

Data were taken in three separate experiments (see Table 1). During the first two experiments (May 1980, October 1980), which include all data except those for 288.6 MeV, the detection system consisted of two arrays of counters, each containing four silicon detectors placed symmetrically on either side of the beam axis. The Si(Li) detectors had depletion depths of 3 mm and each subtended a solid angle of 0.1 msr at a distance of 40 cm from the target. The targets were self-supporting foils of natural carbon with thicknesses varing between 275 and 1000 $\mu g/cm^2$. The thicknesses were determined by weighing foils of known area and by alpha particle energy loss measurements. The effects of

beam movement and misalignment were eliminated to first order by measuring on both sides of the beam and averaging the results. The vertical position of the beam was monitored by two detectors at equal angles above and below the scattering plane. Because of problems with beam halo, mesurements at angles less than $\sim 4^{\circ}$ (lab) were not possible in the first experiment.

For the second experiment, (October, 1980) in which the bulk of the data was taken, the beam quality was improved by energy analysis of the beam. Measurements at angles as small as 2° lab were possible. During the analysis of these data it was found that an important source of error in the deduced values of the reaction cross section was the angular precision with which each detector could be located with respect to the beam axis of the scattering chamber. The overall angular precision was $\pm 0.125^{\circ}$. Therefore the highest energy measurement (for which the error in σ_R was greatest) was repeated in May 1981. A technique was used in which the measurement of the scattering angle was independent of the angle calibration of the moveable detector arms. The arrangement used two position-sensitive detectors, 7.5 cm x 0.76 cm, one on each arm, located behind a metal frame. The frame formed an arc of a circle and was positioned concentrically with the target axis. Vertical fiducial wires placed at intervals of 1° along the frame provided an angle scale independent of the moveable arm settings. A carbon strip target 1.5 mm wide was used instead of the usual target in order to reduce averaging effects produced by

beam movement. Data were taken by first placing the two position-sensitive detectors symmetrically on either side of the beam direction (8^{o} - 15^{o}) and averaging the left and right results using first a full target of known thickness (for normalization) and then the strip target. Following this, the right detector was set at various angles while the left detector was kept fixed in order to monitor possible changes in beam direction and to establish a normalization relative to the full target. With this technique the angular averaging was dominated by beam emmitance (angle variation $\leq 0.3^{o}$) while the angular accuracy of a given measurement was limited only by statistics in the left monitor detector. We estimate that the precision obtained for the mean angle was 0.07 deg. which represents an improvement of a factor of three over previous results.

The errors given in Table II are the quadratic sum of a constant systematic error of 5% and the statistical error for the number of counts in the peak. In a careful comparison of theoretical predictions with these data, the theoretical angular distributions should be averaged over an interval of 0.5^{o} (lab) for all experiments except those of May 1981, for which the interval is 0.3^{o} (lab).

Figures 1-4 present representative examples of the experimental data.

References

1. A. J. Cole, W. D. M. Rae, M. E. Brandan, A. Dacal, B. G. Harvey, R. Legrain, M. J. Murphy, and R. G. Stokstad, Phys. Rev. Letters, 47, 1705 (1981).

2. R. G. Stokstad, R. M. Wieland, G. R. Satchler, C. B. Fulmer, D. C. Hensley, S. Raman, L. D. Rickertsen, A. H. Snell, and P. H. Stelson, Phys. Rev. C20, 665 (1979); R. G. Stokstad et. al., Oak Ridge National Laboratory, Technical Memorandum ORNL/TM-5935 (June, 1977).

Table I. SUMMARY OF DATA CONTAINED IN THIS REPORT

ELAB MEV	ANGULAR RANGE DEG. C.M.	DATE OF EXPERIMENT	
121.60	9.CC - 40.0C	MAY 1980	ELASTIC
134.20	4.CC - 29.00	OCT 1980	ELASTIC
147.60	4.CC - 26.00	OCT 1980	ELASTIC
149.80	4.0C - 26.00	OCT 1980	ELASTIC
161.00	5.C0 - 53.00	OCT 1980	ELASTIC
168.00	4.0C - 26.00	OCT 1980	ELASTIC
173.60	4.00 - 32.00	OCT 1980	ELASTIC
204.20	4.C0 - 26.00	OCT 1980	ELASTIC
242.70	4.0C - 26.0C	OCT 1980	ELASTIC
287.60	7.CC - 27.00	MAY 1980	ELASTIC
288.60	6.CC - 40.0C	MAY 1981	ELASTIC
121.60	9.C0 - 40.00	MAY 1980	2+ Q=-4.43
134.20	7.00 - 32.00	OCT 1980	2+ Q=-4.43
147.60	7.CC - 33.00	OCT 1980	2+ Q=-4.43
149.80	8.CC - 27.00	OCT 1980	2+ Q=-4.43
161.10	6.C0 - 30.00	OCT 1980	2+ Q=-4.43
168.00	8.CC - 25.00	OCT 1980	2+ Q=-4.43
173.60	7.CC - 28.00	OCT 1980	2+ Q=-4.43
204.20	7.0C - 27.00	OCT 1980	2+ Q=-4.43
242.70	5.CC - 25.00	OCT 1980	2+ Q=-4.43
287.60	7.CC - 27.00	MAY 1980	2+ Q=-4.43
288.60	8.CC - 40.00	MAY 1981	2+ Q=-4.43

Ref. A. J. Cole, W. D. M. Rae, M. E. Brandan, A. Dacal, B. G. Harvey, R. Legrain, M. J. Murphy, and R. G. Stokstad, Phys. Rev. Letters, 47 1705 (1981).

Table II. Elastic and Inelastic Scattering Cross Sections

12C(12C,12C)12C ELASTIC SCATTERING ELAB= 121.6 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
9.490	.2228E+04	5.01
10.450	.1964E+04	5.01
10.990	.1816E+04	5.00
12.450	.1197E+04	5.01
13.110	.9011E+03	5.01
13.950	.3791E+03	5.02
15.110	.1103E+03	5.09
15.830	.7527E+02	5.14
16.610	.1045E+03	5.07
17.830	.1594E+03	5.06
18.490	.1540E+03	5.03
19.330	.1300E+03	5.06
19.990	.9342E+02	5.08
21.450	.2404E+02	5.20
22.950	.8433E+01	5.83
24.110	.2228E+02	5.22
25.610	.3175E+02	5.23
26.830	.2218E+02	5.22
28.330	.9604E+01	5.73
29.480	.4173E+01	5.66
30.990	.4664E+01	5.51
32.440	.6878E+01	5.40
33.950	.5879E+01	5.40
35.100	.4593E+01	5.59
36.610	.1973E+01	6.12
37.820	.1060E+01	7.22
39.330	.1037E+01	6.97

12C(12C,12C)12C ELASTIC SCATTERING ELAB= 134.2 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
3.997	.2411E+06	5.01
4.497	.1359E+06	5.01
4.995	.1060E+06	5.03
5.502	.4875E+05	5.03
6.003	.3625E+05	5.04
6.488	.2332E+05	5.09
6.977	.1087E+05	5.13
7.477	.6063E+04	5.23
7.975	.3186E+04	5.54
8.482	.2211E+04	5.65
8.983	.2003E+04	5.41
9.468	.2021E+04	5.78
9.657	.2051E+04	5.67
10.157	.2072E+04	5.64
10.655	.1998E+04	5.83
11.162	.1730E+04	5.81
11.663	.1376E+04	5.58
11.999	.1041E+04	5.21
12.148	.1085E+04	6.36
12.377	.8795E+03	6.46
12.502	.7116E+03	5.23
12.877	.4707E+03	7.41
13.003	.4065E+03	5.06

13.375	.2267E+03	10.22
13.495	.2012E+03	5.59
13.882	.9372E+02	13.65
13.995	.7397E+02	5.73
14.383	.3154E+02	17.18
14.506	.2850E+02	5.98
14.868	.5316E+02	18.37
14.975	.5046E+02	8.24
14.995	.3938E+02	6.17
15.482	.8811E+02	6.58
15.983	.1314E+03	5.16
16.475	.1650E+03	5.69
16.975	.1812E+03	5.31
17.486	.1774E+03	5.17
17.655	.1793E+03	6.08
17.979	.1617E+03	5.30
18.162	.1475E+03	5.99
18.663	.1120E+03	5.19
19.155	.8338E+02	6.28
19.655	.3597E+02	6.32
20.166	.2115E+02	6.23
20.379	.1200E+02	14.27
20.500	.1032E+02	6.48
20.655	.8369E+01	9.15
20.882	.4458E+01	19.55
20.999	.4415E+01	8.23
21.383	.5164E+01	8.18
21.500	.5747E+01	7.41
21.875	.1066E+02	11.72
22.000	.1173E+02	7.62
22.375	.2925E+02	6.63
22.886	.2806E+02	5.98
22.995	.2164E+02	5.78
23.379	.3235E+02	6.34
23.480	.3147E+02	5.56
23.979	.3364E+02	5.54
24.480	.3383E+02	5.49
24.980	.2888E+02	6.19
25.493	.2357E+02	5.76
25.970	.1492E+02	6.10
26.160	.1602E+02	6.03
26.655	.1067E+02	6.52
27.160	.7682E+01	6.88
27.660	.4273E+01	10.62
28.173	.4905E+01	7.95
28.655	.2672E+01	9.55

12C(12C,12C)12C ELASTIC SCATTERING ELAB= 147.6 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
3.997	.1515E+06	5.00
5.000	.6281E+05	5.01
6.000	.2226E+05	5.02
6.497	.1200E+05	5.03
6.977	.7015E+04	5.04
7.483	.3559E+04	5.21
7.981	.2198E+04	5.11
8.478	.1815E+04	5.08
8.980	.1870E+04	5.17

9.477	.1994E+04	5.16
9.657	.2072E+04	5.13
10.163	.1911E+04	5.37
10.660	.1604E+04	5.22
11.158	.1369E+04	5.11
11.662	.9673E+03	5.32
12.157	.5895E+03	5.52
12.377	.4595E+03	5.55
12.883	.2099E+03	7.75
13.381	.6639E+02	7.85
13.878	.2747E+02	8.90
14.382	.4662E+02	9.63
14.501	.5410E+02	6.95
14.877	.9482E+02	7.67
14.995	.9637E+02	5.39
15.498	.1329E+03	5.22
16.001	.1649E+03	5.30
17.481	.1389E+03	5.84
17.979	.1056E+03	5.36
18.478	.7043E+02	5.39
18.981	.3966E+02	6.10
19.480	.5897E+01	6.40
20.161	.7581E+01	13.64
20.659	.8371E+01	8.63
21.158	.1327E+02	6.83
21.661	.2140E+02	6.96
22.881	.3206E+02	7.98
23.379	.3147E+02	6.11
23.878	.2762E+02	5.96
24.497	.1869E+02	5.44
24.995	.1381E+02	5.42
25.502	.1077E+02	5.73
26.005	.5814E+01	5.91
26.501	.3563E+01	6.52
27.477	.2841E+01	7.40
27.979	.2870E+01	5.66
28.482	.4414E+01	6.64
28.985	.5082E+01	6.02
29.481	.5919E+01	5.96
30.157	.5699E+01	6.30
30.659	.5320E+01	6.04
31.162	.5088E+01	6.44
31.665	.3682E+01	6.36
32.161	.3080E+01	6.70
32.877	.1831E+01	8.41
33.379	.1603E+01	7.94
33.882	.1349E+01	9.31
34.385	.1327E+01	8.22
34.881	.1439E+01	8.23

12C(12C,12C)12C ELASTIC SCATTERING ELAB= 149.8 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
3.995	.1477E+06	5.01
4.497	.9308E+05	5.01
5.000	.6255E+05	5.02
5.494	.3664E+05	5.01
6.003	.2093E+05	5.00
6.497	.1143E+05	5.03

6.979	.6176E+04	5.11
7.477	.3196E+04	5.22
7.977	.1997E+04	5.12
8.474	.1726E+04	5.13
8.983	.1846E+04	5.10
9.477	.1941E+04	5.14
9.659	.2091E+04	5.31
10.157	.1985E+04	5.38
10.657	.1669E+04	5.14
11.154	.1304E+04	5.17
11.663	.9018E+03	5.18
12.157	.4991E+03	5.63
12.379	.3972E+03	6.47
12.877	.1684E+03	8.41
13.874	.2649E+02	10.37
14.383	.5160E+02	7.55
14.877	.1084E+03	7.44
14.997	.1015E+03	5.67
15.500	.1674E+03	5.39
16.500	.1659E+03	7.07
17.000	.1461E+03	7.07
17.500	.1151E+03	7.07
17.977	.9472E+02	5.70
19.480	.8951E+01	11.18
19.980	.4461E+01	11.18
20.480	.6922E+01	11.18
20.657	.7700E+01	10.81
21.156	.1541E+02	8.31
22.158	.2722E+02	6.80
22.660	.3013E+02	11.18
23.160	.2636E+02	11.18
23.377	.3075E+02	6.95
23.876	.3062E+02	6.87
24.877	.1453E+02	7.81
25.380	.9102E+01	9.39
25.882	.6057E+01	9.49

12C(12C,12C)12C ELASTIC SCATTERING ELAB= 161.1 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
4.989	.4459E+05	5.01
5.492	.2693E+05	5.02
5.993	.1476E+05	5.02
6.487	.7532E+04	5.07
6.988	.3774E+04	5.09
7.489	.2093E+04	5.27
7.969	.1595E+04	5.23
8.800	.1817E+04	5.01
8.973	.1951E+04	5.17
9.162	.1947E+04	5.28
9.473	.1950E+04	5.20
9.490	.1765E+04	5.01
9.657	.2008E+04	5.17
9.980	.1821E+04	5.08
10.159	.1730E+04	5.31
10.350	.1511E+04	5.01
10.479	.1585E+04	5.06
10.649	.1338E+04	5.26
10.981	.1062E+04	5.13

11.050	.1071E+04	5.01
11.152	.9241E+03	5.38
11.653	.5368E+03	5.59
11.760	.5933E+03	5.02
11.882	.4031E+03	6.22
12.377	.1825E+03	6.62
12.450	.2567E+03	5.07
12.660	.8071E+02	6.50
12.879	.4917E+02	11.72
13.369	.1288E+03	17.50
13.661	.3195E+02	8.21
13.872	.5242E+02	9.73
14.373	.1056E+03	7.51
14.420	.1024E+03	5.10
14.873	.1692E+03	7.00
15.110	.1514E+03	5.11
15.380	.1901E+03	5.70
15.730	.1664E+03	5.11
16.381	.1860E+03	5.68
16.430	.1542E+03	5.08
17.140	.1172E+03	5.09
17.830	.7104E+02	5.24
19.001	.8429E+01	10.31
19.015	.8727E+01	7.41
19.990	.1183E+02	5.14
19.994	.3597E+01	7.88
20.690	.1682E+02	5.06
20.998	.2275E+02	5.74
21.390	.2401E+02	5.07
21.981	.2973E+02	6.95
21.995	.3139E+02	5.77
22.080	.2810E+02	5.06
22.950	.2400E+02	5.07
22.974	.2552E+02	5.94
23.650	.1848E+02	5.05
23.978	.1438E+02	6.10
24.350	.1293E+02	5.13
24.661	.7660E+01	10.66
24.675	.4726E+01	7.24
25.040	.7604E+01	5.20
25.610	.4687E+01	5.33
25.654	.3112E+01	10.38
26.310	.3832E+01	5.24
26.658	.3648E+01	8.55
27.010	.4398E+01	5.38
27.381	.4928E+01	12.80
27.395	.5175E+01	8.64
27.700	.5454E+01	5.29
28.330	.5470E+01	5.28
28.374	.6303E+01	8.13
29.030	.5576E+01	5.17
29.378	.5532E+01	7.54
29.730	.5414E+01	5.31
30.420	.4256E+01	5.36
30.680	.3568E+01	5.29
31.390	.2632E+01	5.61
32.080	.1742E+01	5.73
32.780	.1643E+01	7.96
32.940	.1492E+01	5.60
33.480	.1465E+01	7.34
33.640	.1453E+01	5.69
34.350	.1426E+01	6.07

35.040	.1384E+01	5.89
35.600	.1561E+01	5.58
35.740	.1438E+01	8.30
36.300	.1351E+01	5.73
36.440	.1287E+01	7.60
37.010	.1157E+01	6.29
37.700	.8130E+00	6.44
38.320	.6500E+00	6.28
38.400	.6300E+00	10.47
39.020	.4670E+00	6.99
39.100	.5080E+00	10.38
39.730	.3190E+00	8.77
40.420	.2410E+00	8.94
41.120	.3030E+00	15.34
41.820	.2610E+00	13.56
41.990	.2380E+00	8.68
42.670	.2530E+00	7.86
43.370	.2040E+00	7.60
44.070	.2050E+00	7.39
44.950	.1540E+00	10.20
45.630	.1510E+00	9.35
46.330	.1360E+00	8.63
47.030	.1220E+00	8.67
47.610	.1470E+00	10.44
47.730	.1200E+00	10.22
48.290	.1400E+00	9.48
48.990	.1300E+00	8.79
49.690	.1250E+00	8.55
50.330	.1140E+00	11.49
50.390	.1350E+00	10.02
51.010	.9300E-01	11.08
51.710	.7600E-01	10.69
52.410	.7900E-01	9.95
53.100	.6700E-01	13.35

12C(12C,12C)12C ELASTIC SCATTERING ELAB= 168.0 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
4.001	.1159E+06	5.00
5.010	.4296E+05	5.01
6.019	.1237E+05	5.06
6.981	.3244E+04	5.12
7.990	.1625E+04	5.13
8.999	.2058E+04	5.29
9.661	.1846E+04	5.21
10.670	.1166E+04	5.18
11.679	.3621E+03	6.47
12.377	.8950E+02	8.60
13.002	.1474E+02	5.73
13.377	.3147E+02	11.18
13.506	.3361E+02	5.31
14.385	.1339E+03	11.18
14.984	.1778E+03	5.39
15.983	.1708E+03	5.39
15.992	.1546E+03	5.11
16.486	.1458E+03	5.07
17.020	.7438E+02	5.16
17.964	.2679E+02	7.07
19.662	.9550E+01	6.07

18.969	.4989E+01	7.81
19.166	.4984E+01	6.80
20.000	.1759E+02	5.62
20.644	.2456E+02	7.07
21.382	.3113E+02	5.35
21.649	.2926E+02	5.83
21.877	.3092E+02	5.39
22.680	.2015E+02	5.54
23.364	.1458E+02	7.81
24.369	.4796E+01	8.60
25.376	.3096E+01	8.60

12C(12C,12C)12C ELASTIC SCATTERING ELAB= 173.6 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
3.999	.1210E+06	5.01
4.502	.7923E+05	5.03
6.001	.1202E+05	5.01
6.979	.3051E+04	5.34
7.482	.1682E+04	5.89
7.981	.1753E+04	5.61
8.482	.1918E+04	5.47
8.981	.2096E+04	5.07
9.659	.1917E+04	5.53
10.162	.1554E+04	5.94
10.661	.1095E+04	5.93
11.162	.6427E+03	6.27
11.661	.3209E+03	5.43
12.379	.1722E+02	18.37
12.503	.3462E+02	6.02
12.882	.6346E+01	35.71
12.997	.1801E+02	6.33
13.381	.3272E+02	13.95
13.497	.5645E+02	5.51
13.882	.6532E+02	9.77
13.998	.1195E+03	5.53
14.501	.1690E+03	5.36
15.483	.1969E+03	5.19
15.977	.1726E+03	5.15
16.477	.1293E+03	5.22
16.978	.8738E+02	5.71
17.481	.4852E+02	6.16
18.163	.1485E+02	7.11
18.657	.6438E+01	8.14
19.157	.7013E+01	8.18
19.658	.1662E+02	8.02
20.161	.2177E+02	7.32
20.501	.2352E+02	5.70
20.998	.2820E+02	5.63
21.492	.2935E+02	5.19
21.996	.2624E+02	5.69
22.504	.2031E+02	5.88
22.995	.1932E+02	6.14
23.481	.1193E+02	6.25
23.978	.6719E+01	7.23
24.472	.3762E+01	8.71
24.976	.3112E+01	8.60
25.975	.5014E+01	8.60
26.161	.4800E+01	7.80

26.658	.5973E+01	7.50
27.152	.6820E+01	7.29
28.164	.6201E+01	7.46
28.655	.6895E+01	7.73
28.881	.2306E+01	7.88
29.378	.1609E+01	9.10
29.872	.1289E+01	9.95
30.376	.9670E+00	11.09
30.884	.6190E+00	13.37
31.375	.6590E+00	14.50

12C(12C,12C)12C ELASTIC SCATTERING ELAB= 204.2 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
4.500	.4646E+05	5.01
5.001	.2330E+05	5.01
5.505	.1209E+05	5.02
6.008	.5184E+04	5.07
6.499	.2380E+04	5.09
6.970	.9401E+03	5.33
7.480	.1659E+04	5.20
7.981	.1871E+04	5.14
8.485	.2029E+04	5.13
8.990	.1866E+04	5.22
9.564	.1531E+04	5.39
10.160	.8693E+03	5.37
10.661	.4385E+03	5.55
11.165	.1706E+03	6.26
11.668	.4338E+02	9.94
12.159	.3405E+02	9.36
12.370	.5329E+02	11.47
12.880	.1033E+03	7.57
13.381	.1678E+03	6.36
13.885	.1938E+03	6.20
14.388	.1899E+03	6.52
14.940	.1477E+03	6.40
15.504	.8931E+02	5.33
16.001	.5665E+02	5.70
16.499	.2755E+02	6.47
16.999	.1376E+02	9.55
17.494	.8117E+01	9.10
17.970	.1240E+02	7.81
18.480	.1776E+02	6.40
18.981	.2370E+02	6.60
19.479	.2801E+02	6.48
19.979	.2452E+02	7.97
20.654	.2189E+02	6.83
21.164	.1676E+02	6.53
21.661	.1226E+02	7.77
22.159	.8023E+01	9.14
22.659	.5225E+01	14.23
23.154	.3261E+01	12.85
23.374	.3638E+01	12.44
23.884	.3557E+01	10.39
24.381	.4280E+01	11.25
24.879	.4745E+01	11.12
25.379	.4801E+01	14.81
25.874	.3831E+01	11.98

12C(12C,12C)12C ELASTIC SCATTERING ELAB= 242.7 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
4.000	.5314E+05	5.00
4.499	.2710E+05	5.04
5.000	.1233E+05	5.02
5.420	.4550E+04	5.04
6.006	.1729E+04	5.12
6.497	.7423E+03	5.39
6.980	.1614E+04	5.06
7.478	.2067E+04	5.59
7.980	.2063E+04	5.09
8.400	.1744E+04	5.10
8.986	.1225E+04	5.16
9.477	.7188E+03	5.27
9.660	.6295E+03	5.15
10.159	.2467E+03	7.81
10.660	.5600E+02	7.54
11.080	.2557E+02	9.53
11.666	.7987E+02	7.04
12.157	.1608E+03	6.10
12.380	.1807E+03	5.49
12.876	.2206E+03	8.20
13.380	.2165E+03	5.80
13.800	.1615E+03	5.94
14.386	.1116E+03	6.51
14.877	.6284E+02	7.48
14.995	.5505E+02	7.07
15.496	.2832E+02	6.40
15.995	.1738E+02	6.88
16.499	.1523E+02	7.64
16.999	.1995E+02	6.46
17.497	.2678E+02	6.14
17.975	.3139E+02	7.81
18.476	.3175E+02	6.22
18.975	.2726E+02	6.28
19.479	.2132E+02	6.95
19.979	.1537E+02	6.80
20.477	.9777E+01	7.69
20.655	.8839E+01	9.43
21.156	.6156E+01	9.65
21.655	.5049E+01	10.11
22.159	.4845E+01	11.34
22.659	.5681E+01	9.14
23.157	.5629E+01	9.22
23.375	.6396E+01	13.93
23.876	.6328E+01	9.62
24.375	.5820E+01	9.57
24.879	.4220E+01	11.95
25.379	.3814E+01	10.44
25.877	.3090E+01	11.54

12C(12C,12C)12C ELASTIC SCATTERING ELAB= 287.6 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
6.990	.1906E+04	5.05

7.490	.1750E+04	5.10
7.990	.1410E+04	5.03
8.500	.1064E+04	5.05
9.490	.3747E+03	5.10
9.990	.2256E+03	5.29
10.450	.1287E+03	6.09
10.950	.1157E+03	5.29
11.460	.1455E+03	5.32
12.450	.1857E+03	5.19
12.610	.1765E+03	5.40
13.110	.1430E+03	6.02
13.610	.1030E+03	5.32
14.120	.6621E+02	5.67
15.110	.2610E+02	6.21
15.330	.2592E+02	7.29
15.830	.2395E+02	9.59
16.330	.2975E+02	6.02
16.840	.2933E+02	6.41
17.830	.2789E+02	6.13
17.990	.2474E+02	5.50
20.950	.6469E+01	6.70
23.610	.4869E+01	7.18
26.330	.1600E+01	10.21

12C(12C,12C)12C ELASTIC SCATTERING ELAB= 288.6 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
6.440	.2119E+04	5.09
6.760	.2371E+04	5.08
7.080	.2600E+04	5.08
7.400	.2420E+04	5.08
7.720	.1785E+04	5.45
8.040	.1452E+04	5.55
8.360	.1171E+04	5.17
8.680	.7449E+03	5.26
9.000	.4160E+03	5.45
9.320	.2146E+03	6.59
9.640	.9960E+02	10.51
9.960	.7578E+02	11.72
10.280	.9794E+02	10.58
10.600	.1296E+03	6.35
10.920	.1675E+03	6.07
11.240	.2101E+03	5.87
11.560	.2481E+03	7.70
11.880	.2499E+03	7.69
12.360	.2086E+03	5.88
12.680	.1830E+03	5.99
13.000	.1388E+03	6.27
13.320	.1078E+03	6.59
13.640	.6065E+02	12.88
13.960	.4102E+02	15.27
14.280	.3380E+02	9.16
14.600	.2108E+02	10.92
14.920	.2029E+02	11.09
15.240	.2169E+02	10.81
15.560	.3086E+02	9.46
15.880	.3247E+02	9.29
16.200	.3786E+02	8.82
16.520	.4386E+02	8.39

16.840	.3989E+02	8.66
17.160	.3631E+02	8.94
17.480	.2874E+02	12.81
17.800	.2411E+02	5.56
18.200	.1798E+02	5.74
18.520	.1431E+02	5.91
18.840	.1188E+02	6.09
19.160	.8560E+01	6.46
19.480	.7692E+01	6.60
19.800	.7295E+01	6.68
20.120	.7499E+01	6.64
20.440	.8405E+01	6.49
20.760	.7585E+01	6.63
21.080	.7546E+01	6.63
21.400	.7801E+01	6.59
21.720	.7691E+01	6.61
22.040	.7752E+01	6.59
22.360	.6780E+01	6.79
22.680	.5691E+01	7.09
23.000	.5220E+01	7.25
23.320	.4158E+01	7.72
23.640	.3829E+01	7.91
23.960	.3256E+01	8.32
24.280	.2767E+01	8.78
24.600	.2149E+01	9.60
24.920	.2129E+01	9.63
25.240	.1805E+01	10.24
25.560	.1951E+01	9.96
25.880	.1648E+01	10.62
26.040	.1562E+01	10.84
26.200	.1584E+01	10.79
26.360	.1404E+01	11.31
26.520	.1839E+01	10.18
26.680	.1767E+01	10.34
26.840	.1586E+01	10.79
27.000	.1638E+01	10.65
26.840	.1586E+01	10.79
27.000	.1638E+01	10.66
27.160	.1529E+01	10.95
27.320	.1697E+01	10.51
27.480	.1610E+01	10.73
27.640	.1408E+01	11.31
27.800	.1597E+01	10.76
27.960	.1438E+01	11.23
28.120	.1482E+01	11.09
28.280	.1293E+01	11.72
28.440	.1265E+01	11.83
29.000	.6680E+00	17.75
29.320	.8230E+00	16.13
29.960	.7280E+00	17.08
30.280	.6120E+00	18.51
30.600	.6220E+00	18.37
30.920	.8170E+00	16.22
31.240	.5940E+00	18.79
32.200	.5270E+00	19.89
32.520	.4980E+00	20.42
32.840	.4400E+00	21.66
33.160	.3810E+00	23.20
34.120	.4120E+00	22.39
34.440	.4220E+00	22.14
34.760	.2650E+00	27.68
35.080	.3150E+00	25.50

36.040	.2960E+00	26.30
36.360	.1870E+00	32.82
36.680	.2570E+00	28.15
37.000	.2270E+00	29.92
37.320	.2470E+00	28.74
38.280	.1980E+00	31.99
38.600	.1590E+00	35.75
38.920	.2090E+00	31.20
39.240	.1890E+00	32.78
39.560	.2090E+00	31.26

12C(12C,12C)12C INELASTIC SCATTERING 2+ Q=-4.43 ELAB=121.6 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
9.670	.1679E+03	5.06
9.680	.1662E+03	5.06
10.650	.1048E+03	5.10
11.210	.6476E+02	5.11
12.690	.7012E+02	5.14
12.690	.7009E+02	5.14
13.370	.7678E+02	5.14
14.220	.9829E+02	5.07
15.400	.1008E+03	5.10
15.410	.9995E+02	5.10
16.140	.8243E+02	5.13
16.940	.5828E+02	5.12
18.170	.2551E+02	5.37
18.180	.2566E+02	5.37
18.850	.2074E+02	5.23
19.710	.2001E+02	5.34
20.370	.2570E+02	5.28
20.370	.2493E+02	5.22
21.870	.3486E+02	5.14
23.390	.3086E+02	5.23
23.390	.3108E+02	5.17
24.580	.1499E+02	5.30
26.110	.1057E+02	5.65
26.110	.1084E+02	5.47
27.360	.1492E+02	5.30
28.890	.1282E+02	5.54
28.880	.1254E+02	5.41
30.060	.1310E+02	5.21
30.060	.2044E+02	5.18
31.600	.1017E+02	5.23
33.090	.6583E+01	5.41
33.090	.1033E+02	5.35
34.620	.4971E+01	5.46
35.800	.5379E+01	5.49
35.800	.8375E+01	5.43
37.340	.5789E+01	5.39
38.580	.5104E+01	5.51
38.580	.7748E+01	5.46
40.120	.3714E+01	5.60

12C(12C,12C)12C INELASTIC SCATTERING 2+ Q=-4.43 ELAB=134.2 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)

7.100	.4566E+03	7.50
7.610	.3996E+03	7.72
8.110	.3341E+03	8.79
8.630	.2372E+03	9.36
9.140	.1566E+03	8.83
9.630	.8903E+02	14.44
9.830	.1037E+03	12.71
10.330	.5060E+02	17.17
10.840	.2835E+02	24.83
11.360	.4560E+02	18.59
11.870	.5190E+02	13.43
12.210	.6902E+02	7.45
12.360	.8244E+02	14.87
12.590	.8937E+02	13.55
12.720	.8927E+02	6.57
13.100	.1208E+03	11.72
13.230	.1075E+03	5.20
13.610	.1443E+03	12.06
13.730	.1163E+03	5.96
14.120	.1300E+03	11.72
14.240	.1138E+03	5.48
14.630	.1170E+03	9.77
14.760	.1046E+03	5.28
15.130	.1284E+03	12.25
15.240	.9682E+02	6.83
15.260	.8798E+02	5.54
15.750	.6791E+02	6.93
16.260	.4721E+02	5.43
16.760	.3017E+02	7.99
17.270	.1966E+02	7.32
17.970	.1628E+02	12.35
18.290	.1681E+02	7.36
18.480	.1856E+02	10.41
18.990	.2445E+02	5.79
19.490	.3389E+02	7.69
20.000	.3402E+02	6.41
20.520	.4247E+02	5.65
20.740	.4139E+02	8.66
20.860	.3964E+02	5.44
21.020	.4101E+02	6.07
21.250	.3783E+02	8.10
21.370	.3879E+02	5.46
21.760	.3946E+02	5.50
21.880	.3613E+02	5.45
22.260	.3194E+02	7.83
22.390	.2907E+02	6.16
22.770	.3187E+02	6.50
23.290	.1845E+02	6.39
23.400	.1613E+02	5.98
23.790	.1215E+02	8.01
23.890	.1373E+02	6.16
24.400	.9780E+01	6.61
24.910	.9270E+01	6.57
25.420	.9170E+01	9.10
25.940	.1153E+02	6.42
26.620	.1292E+02	6.23
27.130	.1486E+02	6.11
27.640	.1687E+02	5.91
28.150	.1640E+02	6.89
28.670	.1165E+02	6.33
29.160	.1272E+02	6.20

29.390	.1245E+02	6.26
30.410	.9360E+01	6.54
30.920	.7550E+01	8.59
31.440	.1015E+02	6.52
31.930	.4771E+01	7.80

12C(12C,12C)12C INELASTIC SCATTERING 2+ Q=-4.43 ELAB=147.6 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
7.600	.3652E+03	6.70
8.110	.2642E+03	5.84
8.610	.1963E+03	5.70
9.120	.1209E+03	7.14
9.630	.7306E+02	8.25
9.810	.5876E+02	8.31
10.320	.3516E+02	15.12
10.830	.3744E+02	9.40
11.330	.5920E+02	7.04
11.850	.8748E+02	7.82
12.350	.1054E+03	7.40
12.570	.1233E+03	6.77
13.090	.1311E+03	8.91
13.590	.1264E+03	6.61
14.100	.1167E+03	6.11
14.610	.9371E+02	7.65
14.730	.8131E+02	6.33
15.110	.6571E+02	8.51
15.240	.6285E+02	5.57
15.740	.4241E+02	5.63
16.250	.2932E+02	6.46
17.760	.2000E+02	9.26
18.260	.2633E+02	6.28
18.770	.3357E+02	5.79
19.280	.3861E+02	6.14
20.480	.4396E+02	7.23
20.990	.3689E+02	5.98
21.490	.3172E+02	5.82
22.010	.2549E+02	6.63
23.250	.1246E+02	11.01
23.750	.1097E+02	7.70
24.260	.9921E+01	7.32
24.890	.1041E+02	5.74
25.400	.1181E+02	5.48
25.910	.1242E+02	5.62
26.420	.1378E+02	5.39
26.930	.1402E+02	5.42
27.920	.1343E+02	5.58
28.430	.9706E+01	5.23
28.940	.9772E+01	5.77
29.450	.7690E+01	5.67
29.960	.6264E+01	5.88
30.640	.5123E+01	6.39
31.150	.4620E+01	6.15
31.660	.4797E+01	6.47
32.180	.4753E+01	6.05
32.680	.5007E+01	6.08

12C(12C,12C)12C INELASTIC SCATTERING 2+ Q=-4.43 ELAB=149.8 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
8.600	.1676E+03	6.15
9.810	.4911E+02	12.57
10.310	.3624E+02	15.33
10.820	.3905E+02	9.03
11.840	.8664E+02	6.62
12.350	.1131E+03	7.30
12.570	.1316E+03	8.62
13.080	.1257E+03	9.24
13.580	.1271E+03	6.51
14.090	.1111E+03	6.64
14.610	.8820E+02	6.58
15.110	.6145E+02	8.78
15.230	.5570E+02	6.14
16.760	.1064E+02	8.81
17.270	.1103E+02	8.72
17.770	.1433E+02	7.15
18.260	.2682E+02	7.13
19.780	.2727E+02	5.47
19.780	.2631E+02	6.66
20.290	.2528E+02	6.74
20.800	.2325E+02	6.36
22.500	.9829E+01	6.24
22.510	.1509E+02	7.88
23.020	.7458E+01	9.85
23.530	.5773E+01	9.33
23.740	.8737E+01	10.21
24.250	.1185E+02	9.00
25.270	.1335E+02	6.00
25.270	.1273E+02	8.29
25.780	.1452E+02	7.97
26.290	.1507E+02	7.10

12C(12C,12C)12C INELASTIC SCATTERING 2+ Q=-4.43 ELAB=161.1 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
6.580	.4967E+03	6.01
6.590	.5160E+03	5.72
7.080	.4126E+03	5.79
7.100	.3980E+03	5.35
7.590	.3169E+03	6.50
7.610	.3517E+03	5.24
8.080	.2219E+03	6.41
9.100	.8678E+02	7.92
9.290	.5952E+02	10.77
9.610	.4265E+02	10.67
9.800	.3901E+02	10.65
10.120	.3595E+02	7.95
10.300	.3250E+02	13.76
10.630	.4871E+02	6.53
10.800	.6104E+02	9.10
11.140	.7901E+02	6.47
11.310	.8894E+02	8.08
11.820	.1199E+03	7.21
12.050	.1212E+03	8.33
12.560	.1336E+03	7.13

12.840	.1328E+03	5.95
13.060	.1243E+03	8.26
13.560	.1175E+03	7.41
13.860	.1056E+03	6.12
14.070	.9205E+02	7.98
14.580	.7240E+02	8.34
15.090	.4010E+02	11.07
15.600	.2551E+02	8.86
16.620	.1761E+02	9.99
19.280	.4194E+02	6.42
19.290	.4313E+02	5.56
20.280	.2001E+02	5.61
21.300	.2132E+02	5.76
22.300	.1141E+02	9.16
22.310	.1170E+02	6.83
23.310	.1015E+02	7.08
24.330	.1296E+02	6.19
25.020	.1443E+02	8.44
26.030	.1496E+02	6.47
27.050	.1294E+02	6.18
27.780	.9578E+01	9.71
27.800	.9963E+01	7.07
28.790	.5658E+01	8.33
29.810	.4512E+01	7.93

12C(12C,12C)12C INELASTIC SCATTERING 2+ Q=-4.43 ELAB=168.0 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
8.100	.1922E+03	10.00
9.120	.5635E+02	10.00
9.750	.4553E+02	10.00
10.820	.6987E+02	10.00
11.840	.1186E+03	10.00
12.550	.1351E+03	10.00
13.570	.1137E+03	10.00
13.690	.9170E+02	10.00
14.600	.4830E+02	10.00
15.190	.2094E+02	10.00
16.200	.1573E+02	10.00
16.210	.1797E+02	10.00
16.710	.2218E+02	10.00
17.260	.2310E+02	10.00
18.210	.4770E+02	10.00
19.240	.4340E+02	10.00
19.430	.4218E+02	10.00
20.280	.2824E+02	10.00
20.930	.1943E+02	10.00
21.690	.1400E+02	10.00
21.940	.1101E+02	10.00
22.190	.1061E+02	10.00
23.000	.1041E+02	10.00
23.690	.1355E+02	10.00
24.700	.1590E+02	10.00

12C(12C,12C)12C INELASTIC SCATTERING 2+ Q=-4.43 ELAB=173.6 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)

7.070	.3824E+03	7.25
7.580	.2692E+03	9.13
8.090	.1691E+03	9.49
8.600	.8760E+02	11.36
9.100	.5079E+02	7.30
9.790	.4202E+02	16.57
10.300	.4386E+02	19.55
10.800	.8118E+02	12.62
11.310	.1248E+03	9.89
11.820	.1425E+03	5.92
12.670	.1349E+03	5.27
13.170	.1143E+03	5.23
13.680	.8894E+02	5.32
14.180	.6113E+02	5.97
14.690	.3650E+02	6.48
15.690	.1832E+02	6.74
16.190	.1935E+02	6.21
16.700	.2741E+02	5.96
17.210	.3663E+02	6.52
17.710	.4511E+02	6.21
18.410	.4875E+02	5.71
18.910	.4886E+02	5.50
19.410	.4253E+02	5.63
19.920	.3455E+02	6.59
20.430	.2622E+02	6.93
20.780	.2022E+02	5.77
21.280	.1431E+02	6.14
21.780	.1105E+02	5.47
22.290	.9963E+01	6.64
22.810	.1148E+02	6.44
23.300	.1636E+02	6.30
23.800	.1368E+02	6.11
24.300	.1594E+02	6.04
24.800	.1603E+02	6.07
26.510	.1082E+02	6.35
27.020	.9316E+01	6.65
27.520	.7154E+01	7.14
28.030	.6101E+01	5.81

12C(12C,12C)12C INELASTIC SCATTERING 2+ Q=-4.43 ELAB=204.2 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
7.050	.1919E+03	6.40
7.560	.1679E+03	6.68
8.070	.1169E+03	6.85
8.580	.5280E+02	8.57
9.590	.6776E+02	7.52
9.760	.9217E+02	9.26
10.270	.1167E+03	7.33
10.780	.1487E+03	6.49
11.290	.1653E+03	6.36
11.800	.1465E+03	6.88
12.300	.1180E+03	6.55
12.510	.1279E+03	8.27
13.030	.8053E+02	8.13
13.530	.4765E+02	8.81
14.040	.2845E+02	10.65
14.550	.2389E+02	12.69

15.050	.2502E+02	10.46
15.160	.2361E+02	6.72
15.680	.2899E+02	5.94
16.180	.3543E+02	6.11
16.690	.4050E+02	6.05
17.190	.3812E+02	7.05
17.690	.2655E+02	6.50
19.200	.1918E+02	6.88
19.700	.1337E+02	7.72
20.210	.1093E+02	10.44
20.710	.7857E+01	9.09
20.890	.1101E+02	8.20
21.400	.1138E+02	7.11
21.910	.1327E+02	7.57
22.410	.1525E+02	7.43
22.920	.1499E+02	9.30
23.640	.1294E+02	7.79
24.160	.1228E+02	6.97
24.660	.9222E+01	8.42
25.160	.8553E+01	8.85
25.670	.6073E+01	13.27
26.170	.4237E+01	11.39

12C(12C,12C)12C INELASTIC SCATTERING 2+ Q=-4.43 ELAB=242.7 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
5.470	.6043E+03	5.28
7.050	.1750E+03	5.51
7.550	.8006E+02	11.78
8.050	.4724E+02	8.00
8.480	.5800E+02	7.34
9.070	.1045E+03	6.60
9.570	.1310E+03	6.32
9.750	.1512E+03	5.57
10.250	.1689E+03	5.85
10.250	.1844E+03	8.58
10.760	.1604E+03	6.04
11.180	.1345E+03	6.10
11.780	.9361E+02	6.75
12.270	.6069E+02	7.53
12.500	.4834E+02	6.61
13.000	.2609E+02	9.18
13.000	.2952E+02	18.08
13.510	.2729E+02	9.59
13.930	.3002E+02	8.91
14.520	.3976E+02	8.55
15.020	.5191E+02	7.87
15.130	.4889E+02	7.00
15.140	.4993E+02	5.99
16.660	.4116E+02	6.08
17.160	.3229E+02	5.92
17.660	.2441E+02	6.18
18.140	.1620E+02	9.80
18.150	.1778E+02	7.42
18.650	.1382E+02	7.47
19.160	.1366E+02	7.31
19.660	.1388E+02	7.80
20.170	.1573E+02	6.78
20.670	.1623E+02	6.76

20.850	.1819E+02	7.37
21.360	.1736E+02	7.01
21.860	.1668E+02	6.91
22.370	.1369E+02	7.78
22.870	.1097E+02	7.36
23.380	.9068E+01	7.82
23.600	.7542E+01	13.28
23.600	.7737E+01	9.67
24.100	.5672E+01	9.94
24.610	.5931E+01	9.45
25.120	.6032E+01	10.31

12C(12C,12C)12C INELASTIC SCATTERING 2+ Q=-4.43 ELAB=287.6 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
7.550	.1174E+03	6.31
8.050	.9290E+02	5.36
8.560	.9989E+02	5.46
9.560	.1496E+03	5.23
9.560	.1420E+03	5.28
10.030	.1331E+03	5.52
10.530	.1148E+03	6.23
11.030	.9120E+02	5.35
11.550	.6632E+02	5.66
12.550	.3810E+02	5.85
12.550	.3683E+02	5.98
12.710	.4002E+02	6.57
13.220	.3977E+02	8.04
13.710	.4533E+02	5.69
14.230	.4990E+02	5.87
15.230	.4957E+02	5.66
15.230	.4624E+02	5.79
15.460	.4052E+02	6.53
15.960	.3372E+02	8.42
16.450	.2593E+02	6.14
16.970	.2017E+02	6.92
17.970	.1526E+02	6.90
17.970	.1499E+02	7.13
18.130	.1506E+02	5.79
21.110	.1136E+02	6.01
23.790	.6574E+01	6.65
26.540	.3945E+01	7.53

12C(12C,12C)12C INELASTIC SCATTERING 2+ Q=-4.43 ELAB=288.6 MEV

THETA C.M.(DEG)	SIGMA(MB/SR)	ERROR(PER CENT.)
7.940	.8618E+02	11.05
8.110	.8703E+02	11.01
8.270	.1158E+03	6.47
8.430	.1487E+03	6.17
8.590	.1530E+03	6.14
8.750	.1733E+03	6.02
8.910	.1750E+03	6.01
9.070	.1904E+03	5.94
9.230	.2041E+03	5.88
9.390	.1798E+03	5.99

9.560	.1837E+02	5.97
9.720	.1801E+02	8.46
9.880	.1583E+02	8.82
10.040	.1734E+02	8.56
10.200	.1306E+02	7.40
10.360	.1292E+02	6.33
10.520	.1341E+02	6.29
10.690	.1084E+02	6.56
10.850	.9340E+02	6.77
11.010	.8171E+02	6.99
11.170	.6749E+02	7.34
11.330	.5579E+02	7.74
11.490	.4721E+02	8.15
11.650	.3020E+02	17.43
11.820	.2937E+02	17.62
11.980	.3860E+02	15.56
12.140	.2928E+02	12.59
12.300	.3378E+02	9.10
12.460	.3261E+02	9.21
12.620	.3144E+02	9.33
12.780	.3750E+02	8.78
12.940	.4630E+02	8.19
13.110	.4885E+02	8.07
13.270	.5120E+02	7.95
13.430	.5179E+02	7.92
13.590	.4887E+02	8.07
13.750	.5905E+02	9.54
13.910	.5802E+02	13.04
14.070	.7064E+02	12.00
14.230	.6142E+02	9.42
14.400	.5948E+02	7.60
14.560	.6379E+02	7.46
14.720	.5402E+02	7.83
14.880	.5462E+02	7.80
15.040	.4895E+02	8.07
15.200	.4876E+02	8.07
15.360	.4505E+02	8.27
15.530	.4036E+02	8.58
15.690	.3409E+02	9.08
15.840	.3410E+02	9.08
16.010	.3430E+02	9.06
16.170	.3000E+02	9.51
16.330	.2196E+02	10.69
16.490	.2354E+02	10.41
16.650	.1981E+02	11.14
16.820	.2041E+02	11.01
16.980	.2021E+02	11.05
17.140	.1747E+02	11.72
17.300	.1531E+02	12.38
17.460	.1826E+02	11.51
17.620	.1787E+02	11.61
17.700	.1027E+02	6.21
17.860	.1336E+02	5.96
18.020	.1771E+02	5.74
18.190	.1785E+02	5.74
18.350	.1884E+02	5.70
18.510	.2013E+02	5.65
18.670	.2054E+02	5.64
18.830	.2056E+02	5.64
18.990	.2025E+02	5.65
19.160	.1935E+02	5.68
19.320	.1633E+02	5.80

19.480	.1681E+02	5.78
19.640	.1605E+02	5.81
19.800	.1666E+02	5.82
19.960	.1773E+02	5.74
20.120	.1602E+02	5.82
20.280	.1539E+02	5.85
20.450	.1368E+02	5.94
20.610	.1385E+02	5.93
20.770	.1159E+02	6.10
20.930	.1190E+02	6.07
21.090	.1064E+02	6.18
21.250	.9240E+01	6.35
21.410	.9330E+01	6.33
21.570	.8710E+01	6.42
21.740	.7620E+01	6.59
21.900	.7660E+01	6.59
22.060	.7660E+01	6.59
22.220	.7540E+01	6.61
22.380	.6870E+01	6.75
22.540	.7210E+01	6.68
22.700	.7170E+01	6.69
22.860	.6940E+01	6.73
23.030	.6830E+01	6.76
23.190	.6850E+01	6.75
23.350	.7060E+01	6.71
23.510	.6230E+01	6.91
23.670	.6150E+01	6.93
23.830	.6290E+01	6.90
24.000	.6770E+01	6.77
24.160	.5810E+01	7.03
24.320	.6500E+01	6.84
24.480	.6100E+01	6.94
24.640	.6530E+01	6.83
24.800	.5690E+01	7.06
24.960	.6370E+01	6.88
25.120	.5710E+01	7.06
25.280	.5200E+01	7.24
25.450	.4630E+01	7.46
25.610	.4710E+01	7.43
25.770	.4610E+01	7.47
25.930	.4530E+01	7.51
26.090	.4060E+01	7.76
26.250	.4050E+01	7.76
26.420	.4430E+01	7.56
26.580	.3920E+01	7.83
26.740	.3900E+01	7.84
26.900	.3140E+01	8.39
27.060	.3150E+01	8.38
27.220	.3290E+01	8.27
27.380	.2950E+01	8.57
27.540	.3140E+01	8.39
27.710	.3050E+01	8.47
27.870	.3160E+01	8.38
28.030	.2870E+01	8.64
28.190	.3000E+01	8.52
28.350	.2630E+01	8.90
28.510	.2710E+01	8.81
28.670	.2880E+01	8.64
28.830	.2720E+01	8.81
29.480	.1910E+01	11.18
30.130	.2040E+01	14.58
30.450	.1920E+01	11.15

30.770	.1630E+01	11.95
31.090	.1560E+01	12.17
31.410	.1420E+01	12.63
31.740	.1300E+01	17.91
32.390	.1300E+01	13.16
32.710	.1050E+01	14.44
33.030	.9900E+00	14.80
33.350	.9900E+00	14.80
33.670	.1020E+01	20.03
34.320	.7500E+00	16.38
34.640	.7900E+00	16.38
34.970	.7200E+00	17.05
35.290	.7200E+00	17.18
35.610	.9100E+00	21.20
36.580	.6200E+00	18.39
36.910	.5200E+00	19.94
37.230	.5800E+00	18.93
37.550	.5400E+00	19.71
38.520	.4500E+00	21.42
38.840	.4300E+00	21.90
39.170	.3500E+00	24.12
39.490	.3600E+00	23.78
39.810	.3600E+00	23.78
40.460	.3300E+00	24.76

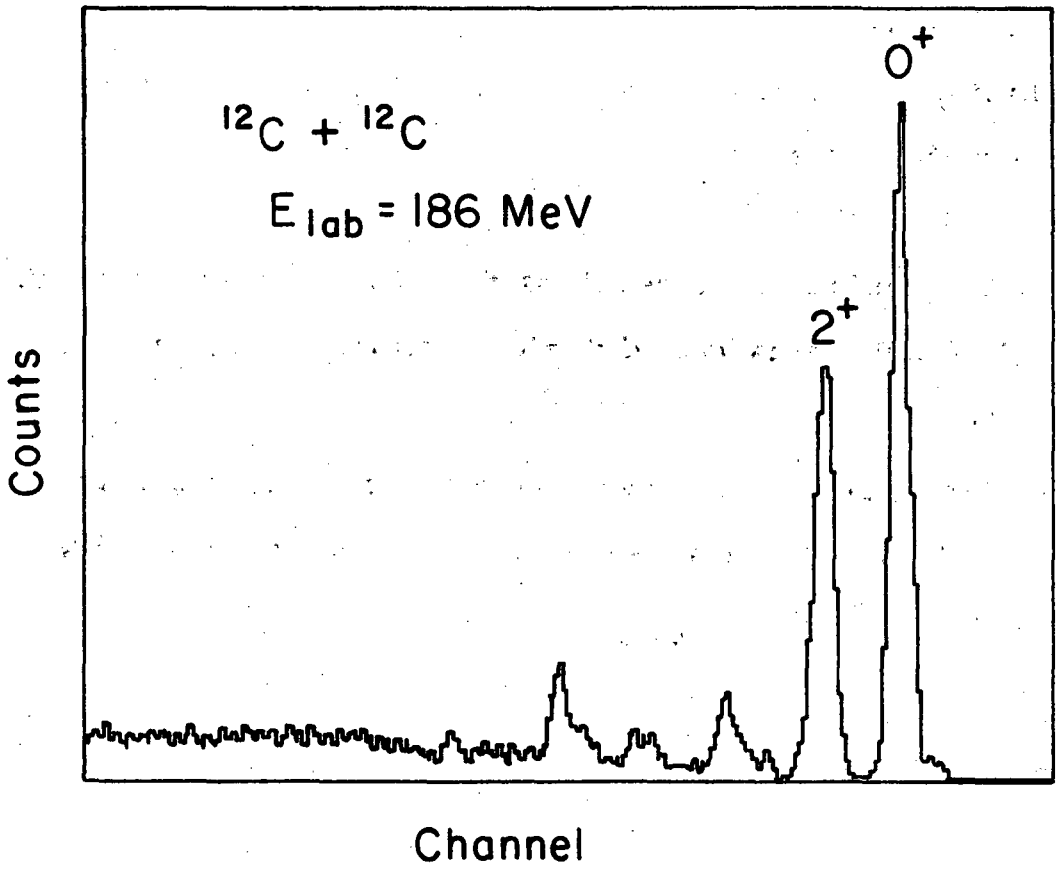
Figure Captions

Fig. 1. A typical energy spectrum at a forward angle.
XBL 8110-7369

Fig. 2. Differential cross sections for elastic scattering versus momentum trasfer.
XBL 817 2416A

Fig. 3. Differential cross sections for elastic scattering at 288.6 MeV, measured with the position-sensitive detector, versus $\theta_{c.m.}$.

Fig. 4. Differential cross sections for inelastic scattering at 288.6 MeV, measured with the position-senstitive detector, versus $\theta_{c.m.}$.



XBL8110-7369

Fig. 1.

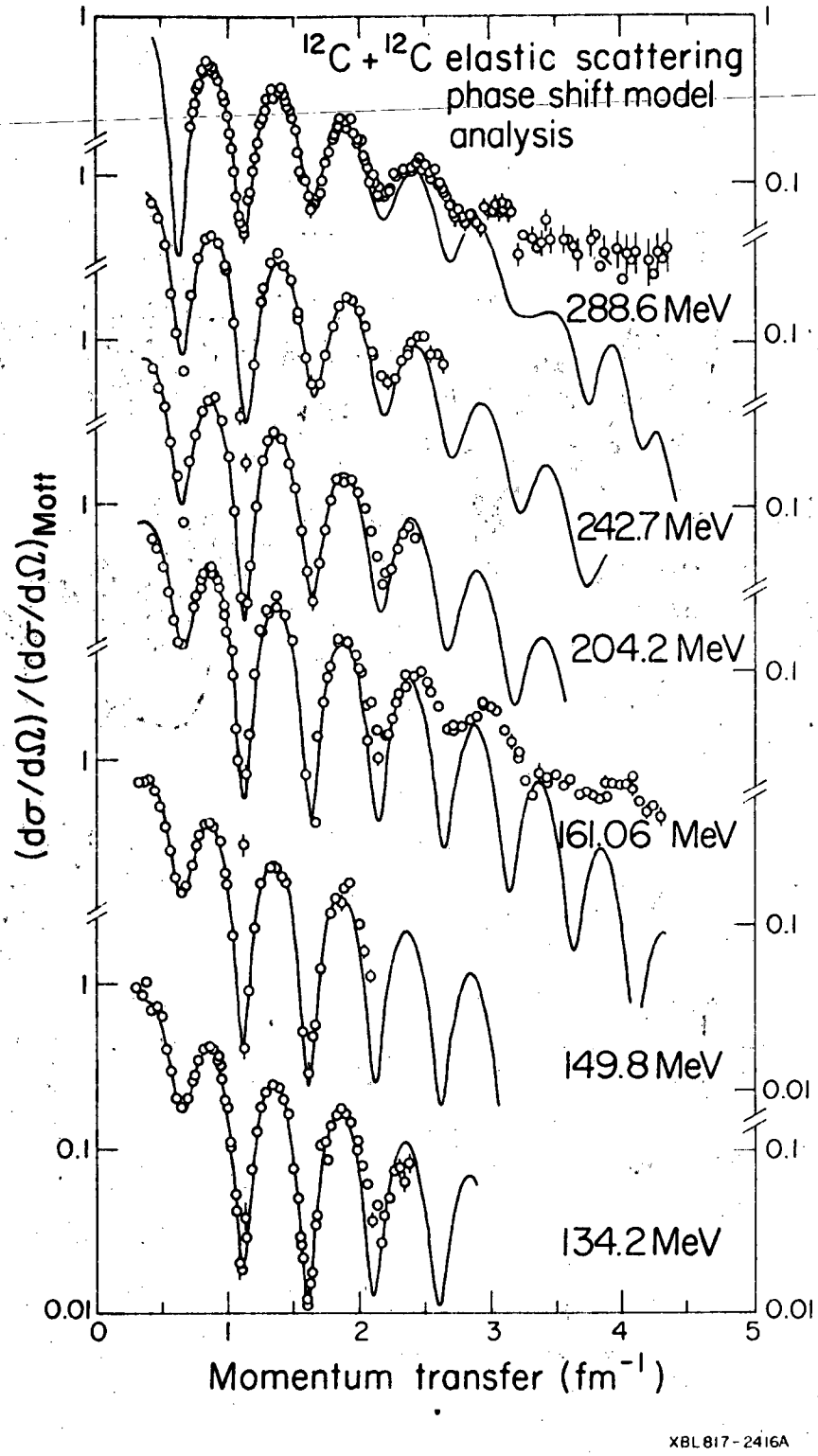
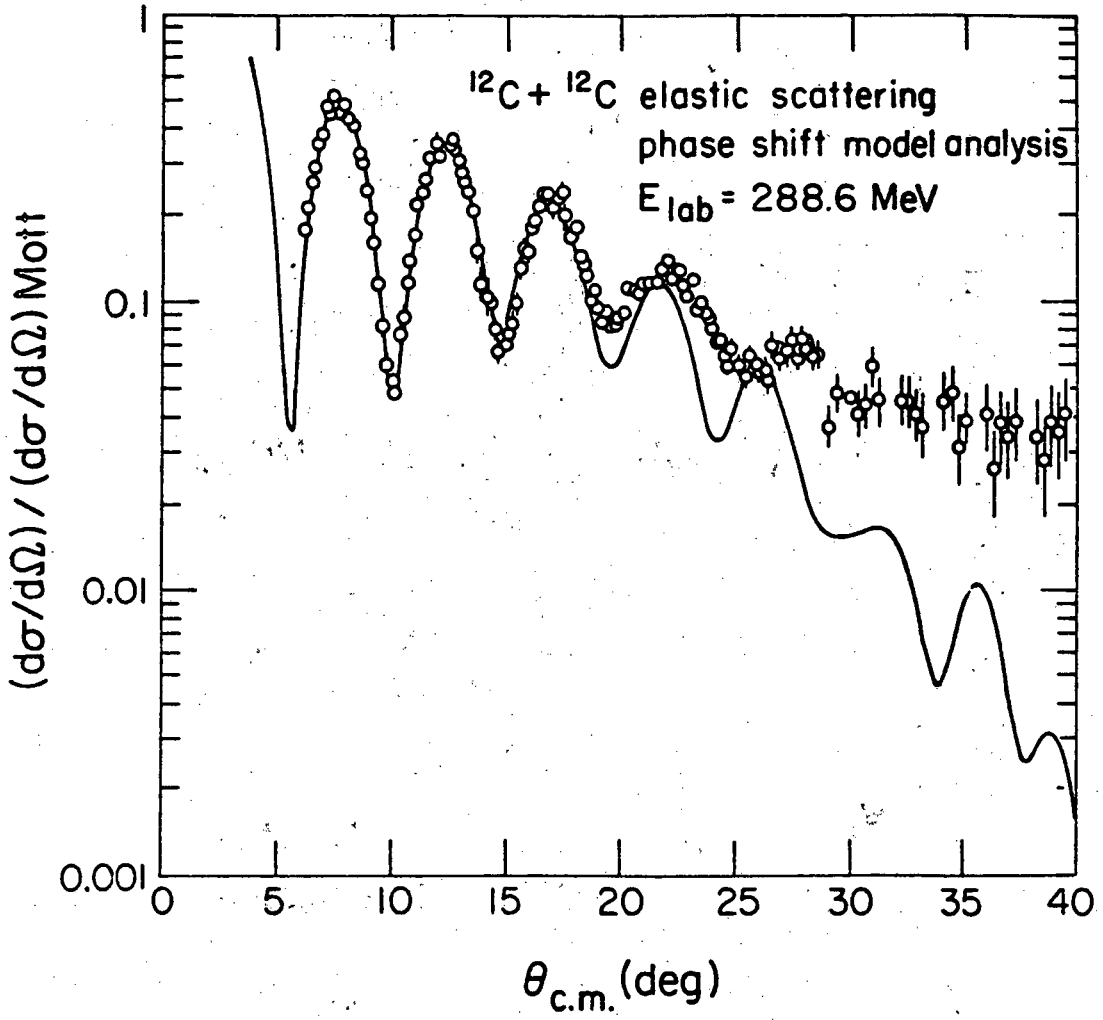

$^{12}C + ^{12}C$ elastic scattering
phase shift model
analysis
288.6 MeV
242.7 MeV
204.2 MeV
161.06 MeV
149.8 MeV
134.2 MeV
$(d\sigma/d\Omega)/(d\sigma/d\Omega)_{Mott}$
Momentum transfer (fm^{-1})
XBL 817-2416A

Fig. 2.



XBL8110-7365

Fig. 3.

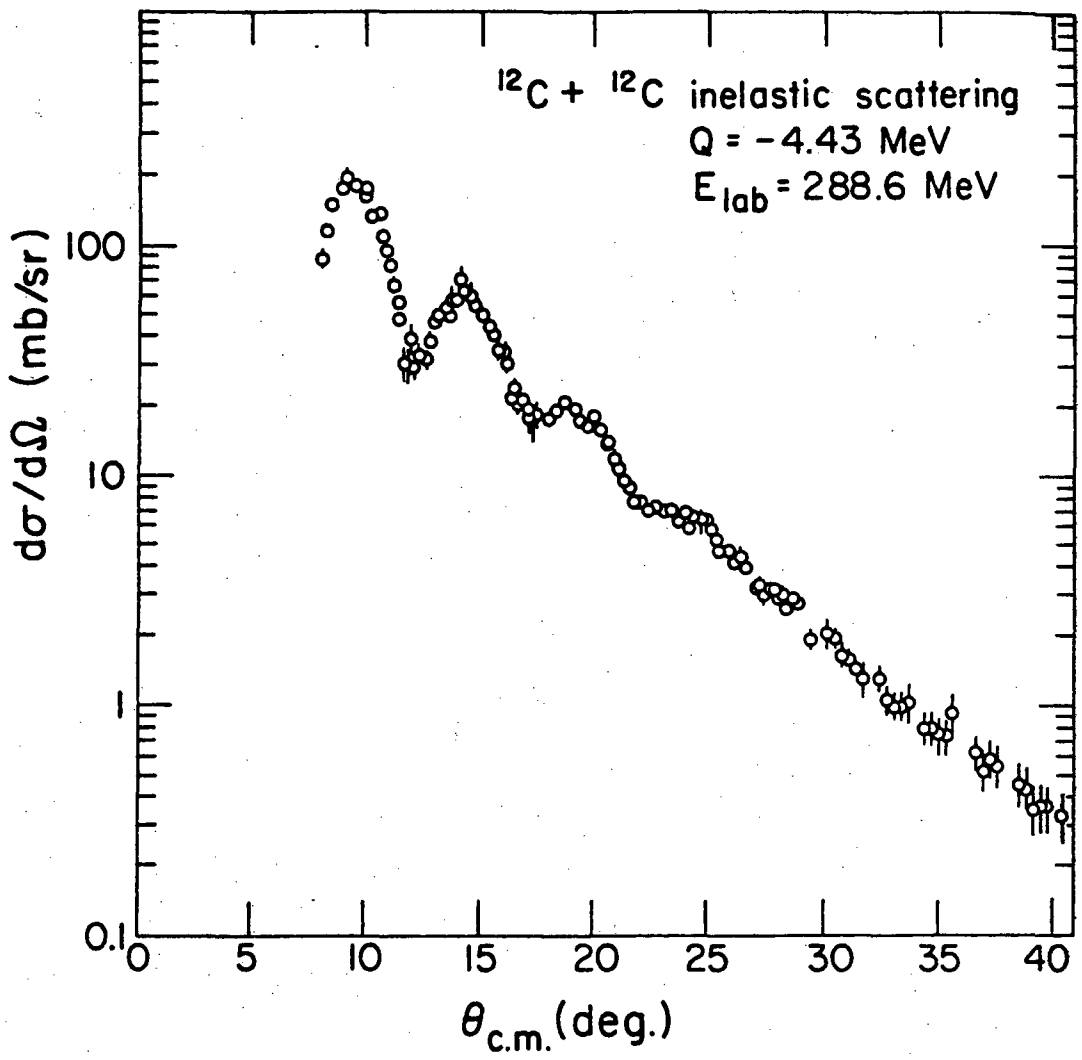


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Fig. 4.

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