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POLARIZED PROTON INDUCED BREAKUP OF ^{12}C AT 16 MeV

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Norihiko KOORI*, Yukinobu WATANABE**, Hironori KASHIMOTO**
Hiroki HANE**, Akira AOTO**, Akihiro NOHTOMI**
Susilo WIDODO**, Osamu IWAMOTO**, Ryoji YAMAGUCHI**
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Takao NAKASHIMA**

日本原子力研究所
Japan Atomic Energy Research Institute

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and Takao NAKASHIMA**

Department of Physics
Tokai Research Establishment
Japan Atomic Energy Research Institute
Tokai-mura, Naka-gun, Ibaraki-ken

(Received January 31, 1992)

Double differential cross sections and analyzing powers were measured of protons and α particles emitted from the bombardment of ^{12}C with 16 MeV polarized protons. The measured energy spectra of protons and α particles were analyzed on the basis of the reaction model in which three or four-body simultaneous breakup process is taken into account. The calculated proton and α particle spectra show good agreement with the continuous spectra observed in the low outgoing energy range.

Keywords: $^{12}C(p,p')3\alpha$ Reaction, Polarized Proton Experiment, Simultaneous Breakup Process, Phase Space Model

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* The University of Tokushima

** Kyushu University

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16MeVにおける炭素－12の偏極陽子による崩壊反応

日本原子力研究所東海研究所物理部

桑折　範彦*・渡辺　幸信**・樫本　寛徳**・羽根　博樹**・青砥　　晃**

納冨　昭弘**・Susilo WIDODO**・岩本　　修**・山口　良二**

相良　建至**・中村　裕之**・前田　和秀**・中島　孝夫**

（1992年１月31日受理）

16MeV偏極陽子による^{12}Cの崩壊反応から放出される陽子及びα粒子の二重微分断面積と偏極分解能を測定した。測定された陽子及びα粒子のエネルギースペクトルを３体あるいは４体への同時崩壊過程を考慮した理論に基づいて解析した。その結果，測定された低エネルギー領域の連続スペクトルは理論計算によって良く説明できた。

本報告書は，日本原子力研究所が平成２年度に徳島大学に委託して行った研究の成果である。

東海研究所　〒319-11　茨城県那珂郡東海村白方字白根2-4

＊　　徳島大学

＊＊　九州大学

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1. Introduction

In interaction of fast neutrons with carbon, the contribution of the $^{12}C(n,n')3\alpha$ reaction to nonelastic cross sections becomes dominant at neutron energies above 10 MeV. A more detailed study of the four-body breakup reaction, therefore, is important for several applications such as estimation of radiation damage and neutron shielding design in fusion energy development and evaluation of kerma factors needed for high energy neutron radiotherapy. Double differential cross sections (DDXs) for the reaction are required in more accurate calculations of neutron transport and kerma factors as well as in an understanding of the reaction mechanism. Several measurements of the $^{12}C(n,n')3\alpha$ cross section have been made in the high incident energy range between 14 and 60 MeV [1,2,3]. However, there are only a few direct measurements of DDXs of both emitted neutrons and α particles in the same incident energy range[4,5].

So far, some of the authors have studied neutron-induced reactions for lithium isotopes [6] and several medium heavy nuclei [7] through experimental investigations of proton-induced reactions, which may be similar to neutron-induced reactions in their reaction mechanism. In the present work, this approach is also applied to investigation of the $^{12}C(n,n')3\alpha$ reaction. DDXs and analyzing powers were measured of protons and α particles emitted from the bombardment of ^{12}C with 14 and 16 MeV polarized protons. The measured spectra of proton and α particle were analyzed on the basis of the reaction model in which simultaneous breakup process was taken into account. The aim of the present work is to establish a reliable model to evaluate the $^{12}C(n,n')3\alpha$ or $^{12}C(p,p')3\alpha$ breakup cross section.

2. Experimental procedure and data processing

The experiment was performed using a 16 MeV polarized proton beam from the tandem Van de Graaff accelerator at Kyushu University. Before this experiment, double differential proton emission cross sections for the $^{12}C(p,p')$ reaction had been measured with a 16 MeV unpolarized proton beam as a preliminary experiment. These experimental procedures are almost the same as those reported elsewhere [6,7]. A ΔE-E counter

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telescope consisting of three silicon surface barrier detectors(E_1: 20μm, E_2: 75μm, E_3: 2000μm) was employed to detect protons and α particles emitted with as low energy as possible (E_p>1 MeV and E_α> 1.5 MeV). A target was a self-supporting foil of natural carbon: its thickness was 0.116 mg/cm^2 for the polarized beam experiment and 0.524 mg/cm^2 for the unpolarized beam one. Beam polarization was monitored using a polarimeter consisting of ^{4}He gas target and two ΔE-E silicon detectors [8] at the down stream of a scattering chamber.

In order to detect low energy α particles that cannot be measured with the ΔE-E counter telescope system, the signals from E_1 detector were separately measured in case of no signal from E_2 or E_3 detector. Since the 20 μm thick E_1 detector stops protons with lower energy than 1.1 MeV, the events having upper than this energy should be due to α particles stopped within the detector (it can stops α particles up to about 4.3 MeV). At the forward angle, however, the α particle spectrum was contaminated by the nucleus ^{12}C recoiled by the elastic and inelastic scattering; the contaminated part was excluded for analysis of the α particle spectra.

3. Experimental results

Differential cross sections and analyzing powers for elastic scattering at 16 MeV are shown together with the other experimental data [9] and those calculated using the optical potential parameter by Nodvik et al.[10] in Fig.1. The present experimental data are consistent with the other experimental data as can be seen in Fig.1. Numerical data of the differential cross sections and analyzing powers are given in Appendix 1.

Figure 2 shows measured double differential proton and α particle emission cross sections for 16 MeV. In Fig.2(b), the experimental data for unpolarized (histograms) and polarized beams (solid circles) are compared and the consistency between both the data is confirmed. The observed proton spectra exhibit a distinct continuum underlying the peak structure corresponding to excited states of ^{12}C. Two peaks observed in Fig.2(d)-(f) correspond to the transition to the ^{9}B(g.s.) and ^{9}B(2.36MeV) via the ^{12}C(p,α)^{9}B reaction. Under those peaks, there is a continuous component that is due to three α breakup processes of our interest. Numerical data of the double differential cross sections for protons and α particles are given in Appendices 2 and 3, respectively.

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4. Theoretical analysis and discussion

Here the following analysis will be restricted to only the energy spectra of proton and α particle and the analyzing power will not be mentioned.

Multiparticle breakup processes of ^{12}C induced by proton or neutron are mainly classified into the sequential breakup process via some intermediate states and the simultaneous breakup process [3]. Here we consider the following simultaneous breakup processes in analyzing the observed continuous spectra:

(i) $^{12}C + p \rightarrow p + \alpha + {}^{8}Be$
$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad \hookrightarrow \alpha + \alpha$

(ii) $^{12}C + p \rightarrow p + \alpha + \alpha + \alpha$

The processes (i) and (ii) are referred to as three-body simultaneous breakup (3BSB) process and four-body simultaneous breakup (4BSB) process, respectively. In the 3BSB process, the sequential decay of ^{8}Be into two α particles occurs and finally three α particles are generated as the reaction products.

The energy spectra of particles emitted in the simultaneous breakup process can be calculated by using the phase space distribution $\rho_f(E_1)$ derived on the basis of the reaction kinematics [11] as follows:

$$\frac{d^2\sigma}{dE_1 d\Omega_1} = \frac{2\pi}{h^2}\frac{m_p}{k_p}|M|^2 \rho_f(E_1) \qquad (1)$$

where m_p and k_p are the mass and the wave number of incident proton, respectively. $|M|^2$ is the square of the transition matrix element. For simplicity, we assume that $|M|^2$ is an adjustable parameter independent of the angle and outgoing energy. Namely, the shape of energy spectrum is provided by the phase space distribution and the absolute value is

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determined by normalization to the experimental value under the assumption that there is no other competing processes. In the present analysis, this adjustable parameter is determined so as to reproduce reasonably the continuum component of the proton spectra for 16 MeV. The same value is used as the normalization parameter in the calculation of the α particle spectra.

The calculated 4BSB spectra for protons and α particles are shown by solid lines in Fig.2. Since three α particles emitted in the breakup process cannot be distinguished each other in the measurement using the present detector system, the right hand side of eq.(1) is multiplied by a factor of three and the obtained α particle spectra are compared with the experimental data. The calculated proton and α particle spectra show good agreement with the experimental ones in shape and magnitude as shown in Fig.2. Therefore, the 4BSB process seems to be responsible for emissions of protons and α particles with low outgoing energies. However, there is somewhat overestimation in the region around the threshold energy of three α breakup in both those proton and α particle spectra. Furthermore, we have applied the similar 4BSB calculations to the $^{12}C(p,p')3\alpha$ reaction at 14 MeV. The result is shown in Fig.4. In the calculation, the square of the matrix element $|M|^2$ is multiplied by a factor of 1.9 to reproduce the experimental spectra. This indicates that there is the incident energy dependence of $|M|^2$. Antolkovic' et al. [12] have also reported the strong incident energy dependence of $|M|^2$ (4BSB) in their analysis of the $^{12}C(n,n')3\alpha$ reaction at 16-27 MeV.

According to the analysis by Antolkovic' et al.[12], the sequential decay process involving the $n + \alpha + {}^8Be_{g.s.}$(or $^8Be_{2.9}$) system is the dominant reaction mechanism and the contribution of the 4BSB process is appreciably smaller than that of the 3BSB process. To estimate the contribution of 3BSB in the $^{12}C(p,p')3\alpha$ reaction, therefore, only the proton spectra for 16 MeV were calculated using the reaction model in which the α-α final state interaction is taken into account in the sequential decay from the ^8Be ground state and the 2.9 MeV state. The absolute values for each component are normalized so as to reproduce the experimental spectra. As shown in Fig.5, the difference between the calculated 3BSB and 4BSB spectra appears obviously near the threshold energy (5-6MeV), while both the spectra have similar shape in the low outgoing energy region. From the fitting of spectra near the threshold energy, the transition to ^8Be ground state (dotted line) in 3BSB is found to be much smaller than that to the 2.9 MeV excited state (dot-dashed line). Further calculation of 3BSB spectra for α

emissions will be necessary to identify which process is dominant in the continuum underlying the peak structure, 3BSB or 4BSB process.

5. Summary

The double differential proton and α particle emission cross sections were measured for the $^{12}C(\vec{p},p')3\alpha$ reaction at 16 MeV. For the three or four-body simultaneous breakup process, the measured energy spectra of protons and α particles were analyzed in terms of the phase space model with the transition matrix element independent of the angle and outgoing energy. The calculated 4BSB spectra of both protons and α particles reproduced well the continuum observed in low outgoing energy region. Although the calculation on the basis of 3BSB process can also provide good fitting to the proton spectra, especially near the breakup threshold energy, the same analysis will be needed for the α particle spectra. Further analysis of the experimental data including the analyzing power will be required to enhance understanding of the p + ^{12}C breakup reaction mechanism.

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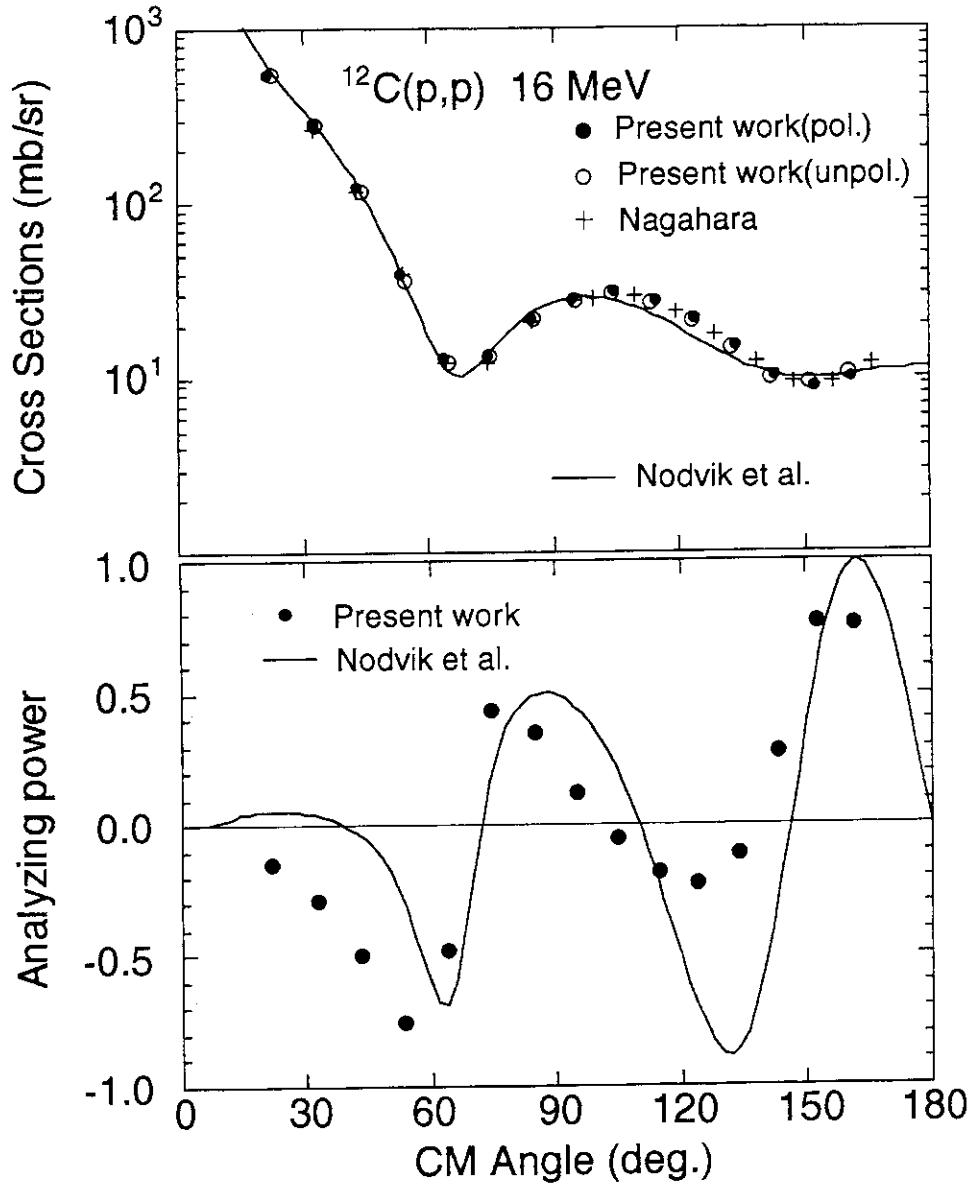

Fig. 1 Differential cross sections and analyzing powers of ^{12}C(p,p) scattering at 16 MeV. Solid lines are for calculations with the optical potential parameter by Nodvik et al.(ref.[10]).

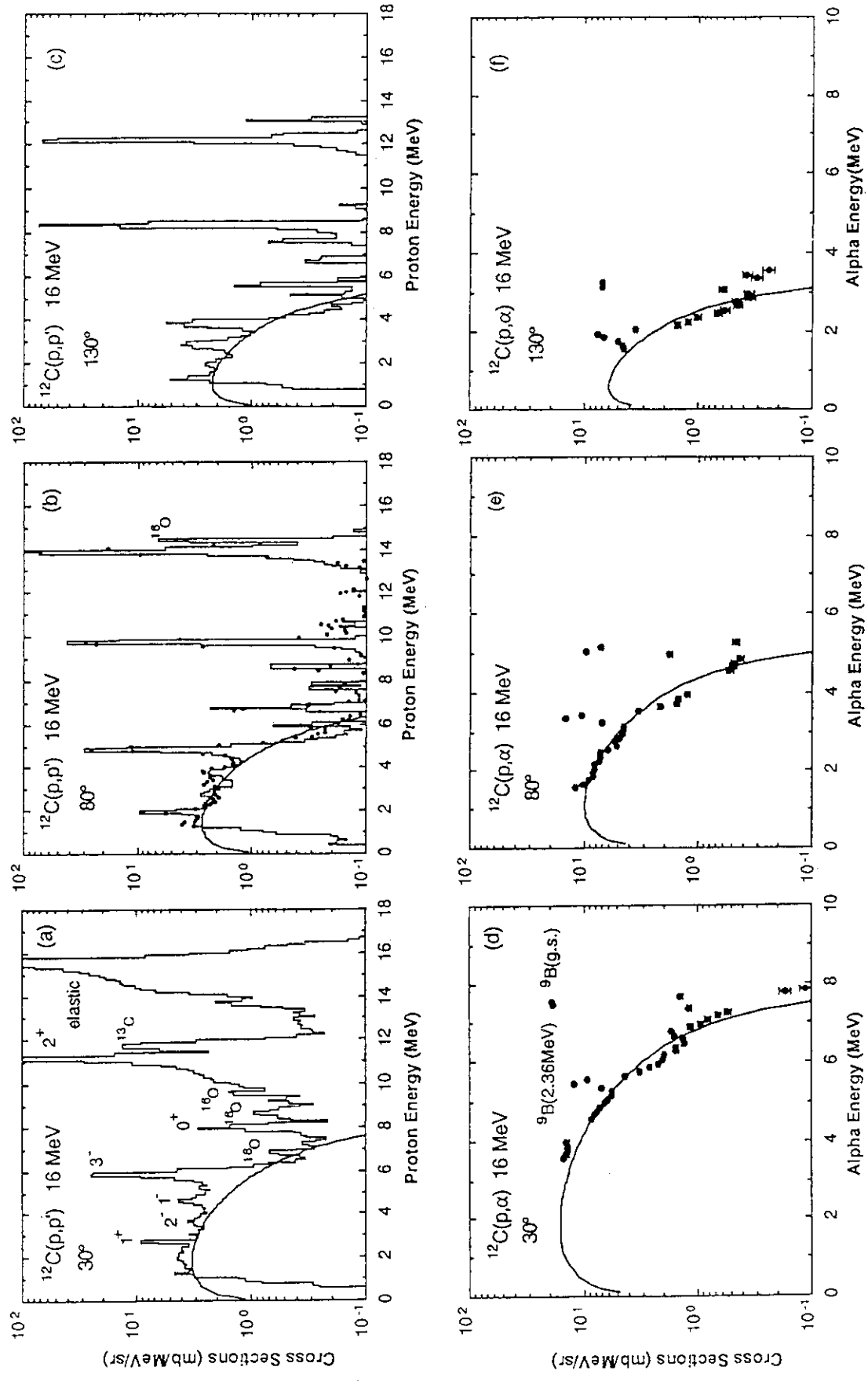

Fig. 2 Double differential proton and α particle emission cross sections of the ^{12}C(p,p')3α reaction at 16 MeV. The measured angles are 30°, 80°, and 130°. Histograms and solid circles are the experimental data and solid lines show the calculated spectra for the four-body simultaneous breakup (4BSB) process (see text).

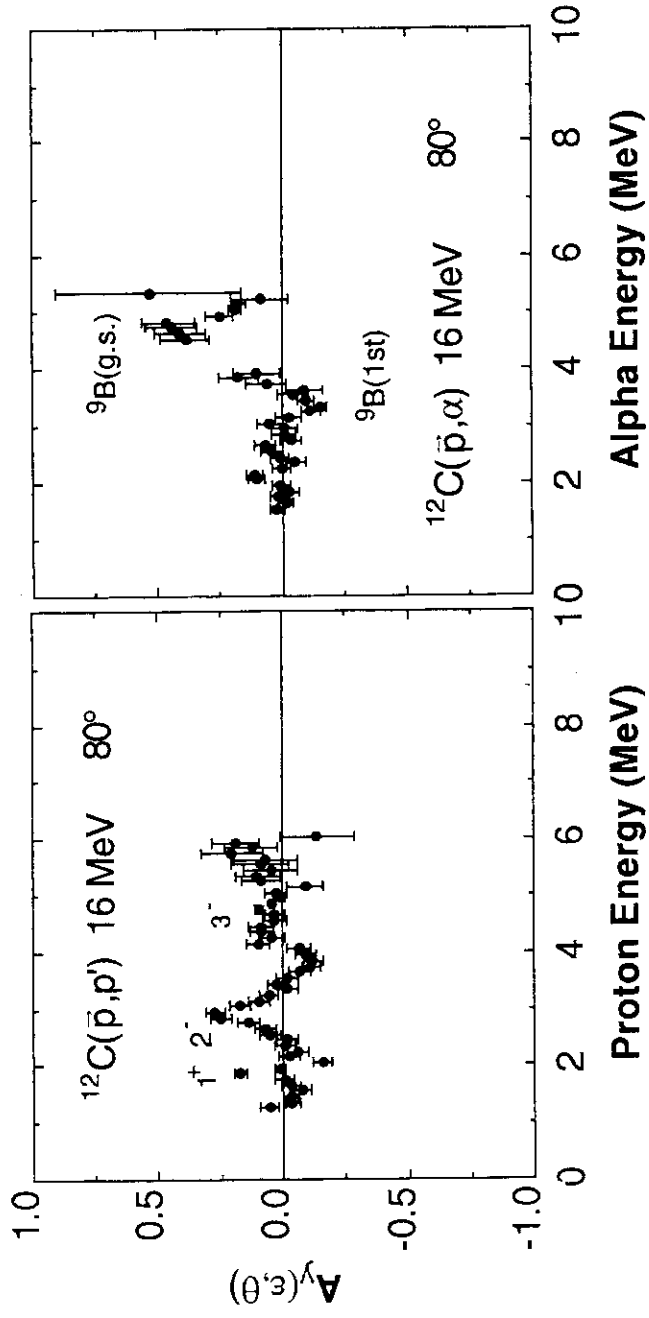

Fig. 3 Experimental analyzing powers of protons and α particles emitted at 80° for the $\vec{p}$ + ^{12}C reaction at 16 MeV.

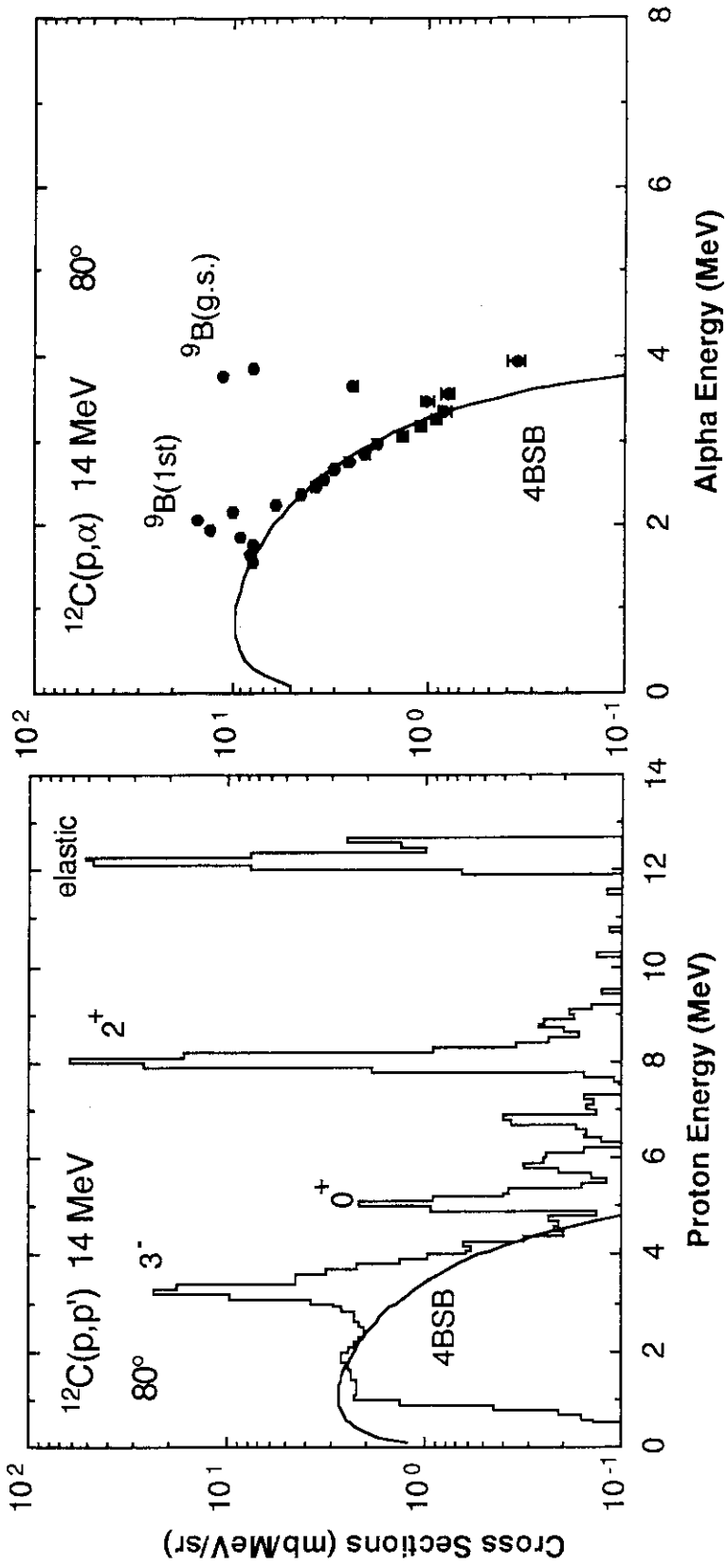

Fig. 4 Double differential proton and α particle emission cross sections for the $^{12}C(\vec{p},p')3\alpha$ reaction at 14 MeV. Solid lines show the calculated 4BSB components.

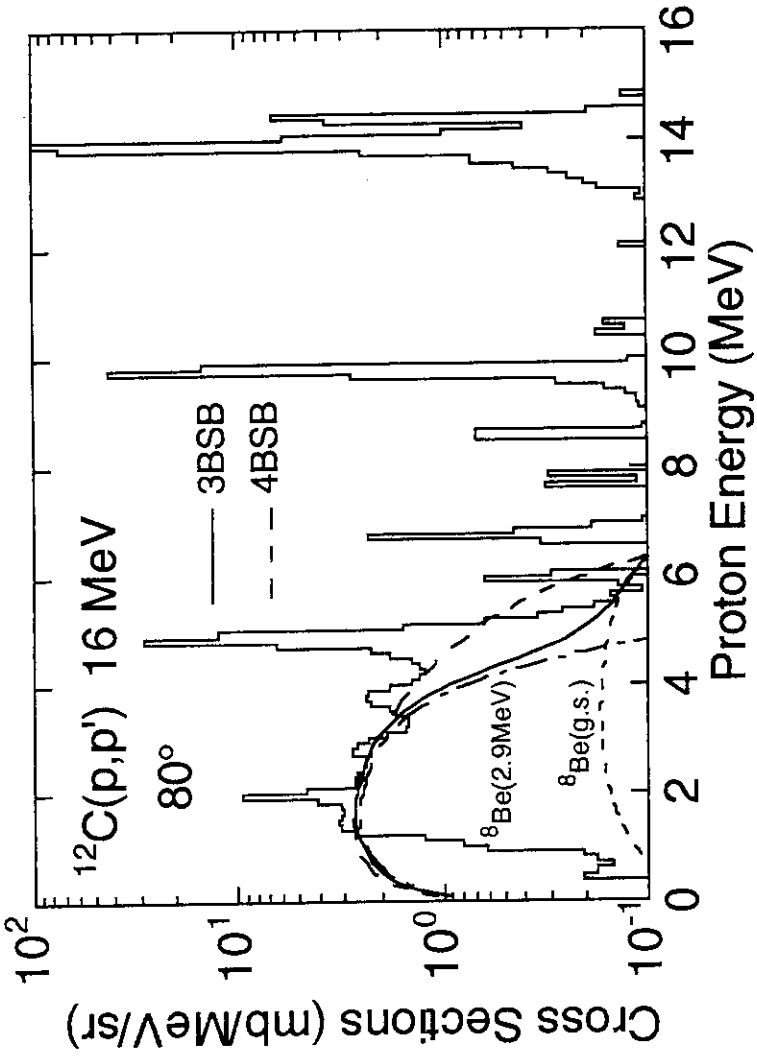

Fig. 5 Double differential proton emission cross sections of the ^{12}C(p,p') reaction at 16 MeV. Solid and dashed lines show the calculated 3BSB and 4BSB components, respectively.

Appendices:

Appendix 1 Differential cross sections and analyzing powers of the $^{12}C(p,p_0)$ and (p,p') scattering at 16 MeV. Numerical data and figures.

Appendix 2 Double differential cross sections of the $^{12}C(p,p'x)$ reaction at 16 MeV. Numerical data and figures.

Appendix 3 Double differential cross sections of the $^{12}C(p,\alpha x)$ reaction at 16 MeV. Numerical data and figures.

Appendix 1 Differential cross sections and analyzing powers of the $^{12}C(p,p_0)$ and (p,p') scattering at 16 MeV.

1. ^{12}C ground (0^+)

Angle(CM)	dσ/dΩ(mb/sr)	error(mb/sr)	Ay	error
21.65	5.552e+2	7.49e-1	-1.458e-1	2.48e-3
32.41	2.911e+2	5.61e-1	-2.911e-1	3.49e-3
43.10	1.255e+2	2.41e-1	-4.958e-1	3.48e-3
53.69	4.044e+1	1.09e-1	-7.614e-1	4.85e-3
64.17	1.301e+1	4.76e-2	-5.074e-1	7.01e-3
74.53	1.344e+1	4.91e-2	4.354e-1	4.96e-3
84.74	2.180e+1	6.28e-2	3.517e-1	3.99e-3
94.82	2.862e+1	6.35e-2	1.250e-1	3.90e-3
104.74	3.127e+1	7.00e-2	-5.250e-2	3.53e-3
114.53	2.825e+1	7.17e-2	-1.824e-1	3.84e-3
124.17	2.188e+1	5.94e-2	-2.223e-1	4.05e-3
133.69	1.515e+1	4.82e-2	-1.121e-1	5.08e-3
143.10	1.048e+1	4.11e-2	2.838e-1	8.12e-3
152.41	8.988e+0	4.12e-2	7.687e-1	9.25e-3
161.65	1.013e+1	4.26e-2	7.599e-1	7.47e-3

2. ^{12}C 1st (4.439 MeV 2^+)

Angle(CM)	dσ/dΩ(mb/sr)	error(mb/sr)	Ay	error
21.97	4.146e+1	1.62e-1	-8.310e-2	7.19e-3
32.88	3.408e+1	1.32e-1	-1.337e-1	6.93e-3
43.70	2.635e+1	8.13e-2	-2.470e-1	5.33e-3
54.41	1.885e+1	6.07e-2	-3.473e-1	5.37e-3
64.99	1.304e+1	4.67e-2	-4.358e-1	6.83e-3
75.42	8.678e+0	3.70e-2	-3.525e-1	7.13e-3
85.68	6.186e+0	3.16e-2	-1.009e-1	8.15e-3
95.76	5.493e+0	2.80e-2	2.076e-1	8.76e-3
105.68	6.373e+0	3.15e-2	3.234e-1	8.33e-3
115.42	7.853e+0	3.71e-2	2.594e-1	7.88e-3
124.99	9.679e+0	3.87e-2	2.398e-1	6.65e-3
134.41	1.167e+1	4.25e-2	1.978e-1	6.18e-3
143.70	1.336e+1	4.68e-2	1.761e-1	7.16e-3
152.88	1.450e+1	4.94e-2	1.697e-1	6.42e-3
161.97	1.569e+1	5.14e-2	1.382e-1	5.44e-3

3. ^{12}C 3rd (9.641 MeV 3^-)

Angle(CM)	dσ/dΩ(mb/sr)	error(mb/sr)	Ay	error
22.80	5.841e+0	7.09e-2	9.910e-2	2.19e-2
34.09	5.905e+0	6.08e-2	1.569e-1	1.75e-2
45.26	5.366e+0	3.94e-2	2.072e-1	1.16e-2
56.27	5.261e+0	3.38e-2	2.252e-1	9.80e-3
67.09	5.242e+0	3.07e-2	1.533e-1	1.03e-2
77.70	5.281e+0	3.06e-2	9.390e-2	8.94e-3
88.07	4.946e+0	3.05e-2	3.990e-2	9.50e-3
98.20	4.386e+0	2.68e-2	-3.460e-2	1.11e-2
108.07	3.866e+0	2.73e-2	-5.790e-2	1.12e-2
117.70	3.010e+0	2.65e-2	-1.033e-1	1.39e-2
127.09	2.357e+0	2.30e-2	-1.180e-1	1.52e-2
136.27	1.982e+0	2.04e-2	-1.029e-1	1.69e-2
145.26	1.575e+0	1.92e-2	-6.160e-2	2.44e-2
154.09	1.114e+0	1.94e-2	-9.940e-2	3.22e-2
162.80	9.219e-1	2.21e-2	5.610e-2	5.42e-2

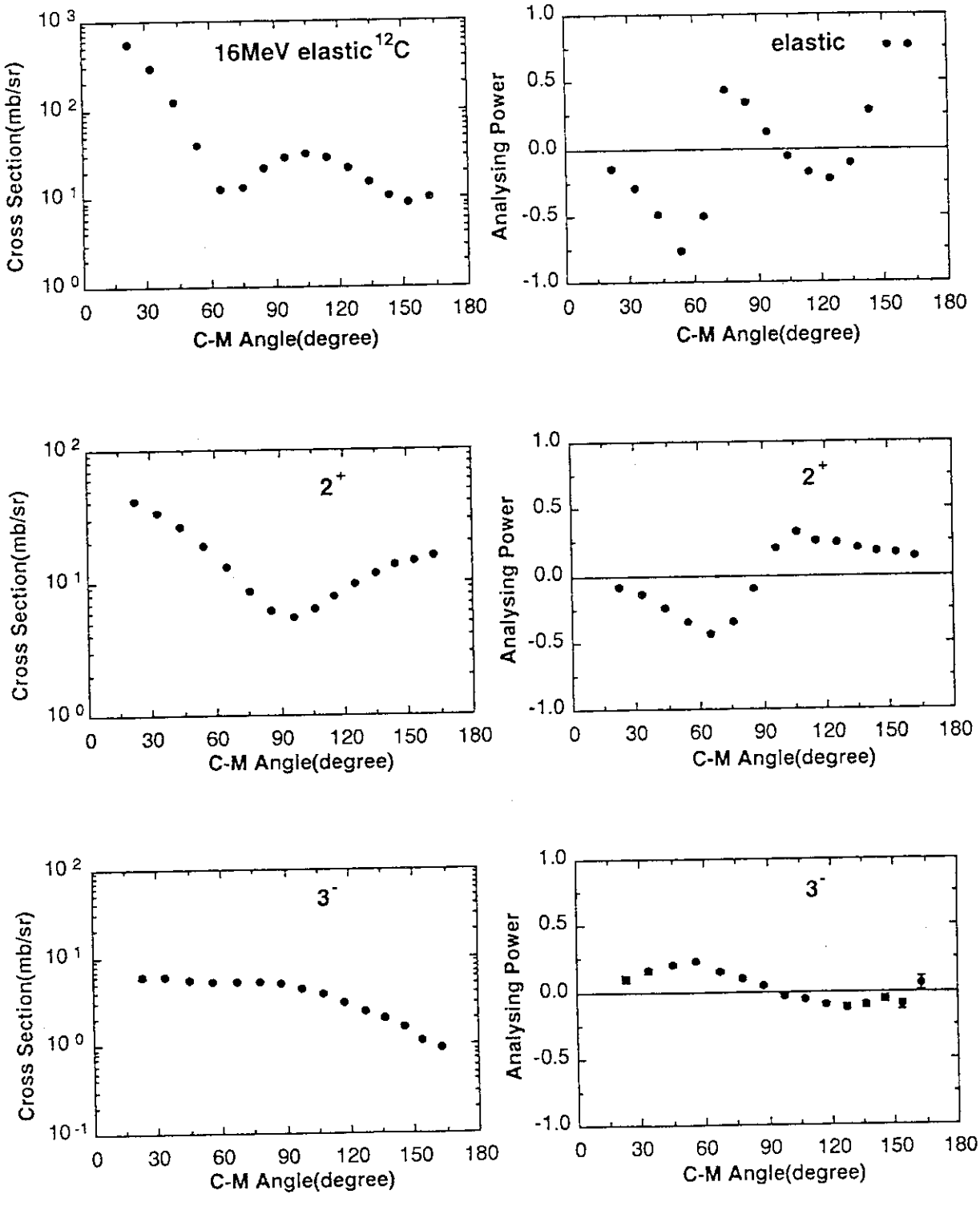

Fig. A-1. Differential cross sections and analyzing powers of the $^{12}C(p,p_0)$ and (p,p') scattering at 16 MeV.

Appendix 2 Double differential cross sections of the $^{12}C(p,p'x)$ reaction at 16 MeV.

<< $^{12}C(p,xp')$ E_p = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** I-1

Ep' (MeV)	20 deg.	30 deg.	40 deg.
1.0 -- 1.1	5.305E-01(1.939E-01)	1.306E+00(1.776E-01)	1.975E+00(1.055E-01)
1.1 -- 1.2	2.266E+00(2.287E-01)	3.176E+00(2.171E-01)	3.179E+00(1.268E-01)
1.2 -- 1.3	4.933E+00(2.740E-01)	4.661E+00(2.437E-01)	3.970E+00(1.389E-01)
1.3 -- 1.4	4.552E+00(2.665E-01)	3.456E+00(2.207E-01)	4.215E+00(1.424E-01)
1.4 -- 1.5	3.361E+00(2.446E-01)	3.286E+00(2.164E-01)	4.390E+00(1.447E-01)
1.5 -- 1.6	3.509E+00(2.458E-01)	3.726E+00(2.240E-01)	4.659E+00(1.483E-01)
1.6 -- 1.7	3.526E+00(2.448E-01)	3.674E+00(2.221E-01)	4.725E+00(1.490E-01)
1.7 -- 1.8	3.713E+00(2.469E-01)	3.939E+00(2.263E-01)	4.940E+00(1.518E-01)
1.8 -- 1.9	3.708E+00(2.456E-01)	4.167E+00(2.298E-01)	4.642E+00(1.475E-01)
1.9 -- 2.0	3.931E+00(2.484E-01)	4.351E+00(2.325E-01)	4.919E+00(1.512E-01)
2.0 -- 2.1	4.279E+00(2.535E-01)	4.214E+00(2.292E-01)	4.759E+00(1.489E-01)
2.1 -- 2.2	4.654E+00(2.589E-01)	4.226E+00(2.288E-01)	4.416E+00(1.439E-01)
2.2 -- 2.3	4.337E+00(2.525E-01)	3.837E+00(2.208E-01)	4.176E+00(1.402E-01)
2.3 -- 2.4	4.581E+00(2.559E-01)	4.044E+00(2.241E-01)	4.292E+00(1.418E-01)
2.4 -- 2.5	4.189E+00(2.482E-01)	4.022E+00(2.230E-01)	4.770E+00(1.484E-01)
2.5 -- 2.6	4.056E+00(2.449E-01)	3.484E+00(2.119E-01)	9.286E+00(2.018E-01)
2.6 -- 2.7	4.163E+00(2.458E-01)	6.354E+00(2.627E-01)	6.579E+00(1.716E-01)
2.7 -- 2.8	5.664E+00(2.703E-01)	9.141E+00(3.040E-01)	3.344E+00(1.265E-01)
2.8 -- 2.9	8.826E+00(3.168E-01)	2.991E+00(1.994E-01)	3.219E+00(1.242E-01)
2.9 -- 3.0	3.193E+00(2.244E-01)	2.908E+00(1.969E-01)	3.306E+00(1.255E-01)
3.0 -- 3.1	3.702E+00(2.331E-01)	3.497E+00(2.086E-01)	3.640E+00(1.308E-01)
3.1 -- 3.2	3.315E+00(2.247E-01)	2.784E+00(1.928E-01)	3.172E+00(1.230E-01)
3.2 -- 3.3	3.219E+00(2.219E-01)	2.914E+00(1.949E-01)	3.077E+00(1.212E-01)
3.3 -- 3.4	2.861E+00(2.137E-01)	2.585E+00(1.869E-01)	3.105E+00(1.215E-01)
3.4 -- 3.5	3.189E+00(2.195E-01)	2.958E+00(1.946E-01)	3.513E+00(1.282E-01)
3.5 -- 3.6	2.789E+00(2.104E-01)	3.135E+00(1.979E-01)	3.431E+00(1.267E-01)
3.6 -- 3.7	3.534E+00(2.247E-01)	3.563E+00(2.063E-01)	2.890E+00(1.174E-01)
3.7 -- 3.8	3.905E+00(2.311E-01)	3.032E+00(1.945E-01)	2.556E+00(1.112E-01)
3.8 -- 3.9	3.666E+00(2.258E-01)	2.791E+00(1.887E-01)	2.476E+00(1.095E-01)
3.9 -- 4.0	3.154E+00(2.154E-01)	2.706E+00(1.866E-01)	2.478E+00(1.095E-01)
4.0 -- 4.1	3.109E+00(2.144E-01)	2.420E+00(1.799E-01)	2.405E+00(1.082E-01)
4.1 -- 4.2	2.915E+00(2.103E-01)	2.592E+00(1.839E-01)	2.528E+00(1.105E-01)
4.2 -- 4.3	2.656E+00(2.053E-01)	2.497E+00(1.492E-01)	2.432E+00(1.087E-01)
4.3 -- 4.4	3.029E+00(2.131E-01)	2.630E+00(1.520E-01)	3.231E+00(1.230E-01)
4.4 -- 4.5	3.370E+00(2.200E-01)	3.168E+00(1.628E-01)	3.301E+00(1.242E-01)
4.5 -- 4.6	3.473E+00(2.221E-01)	3.887E+00(1.761E-01)	3.290E+00(1.240E-01)
4.6 -- 4.7	4.468E+00(2.409E-01)	4.239E+00(1.823E-01)	2.846E+00(1.164E-01)
4.7 -- 4.8	4.648E+00(2.442E-01)	3.245E+00(1.642E-01)	2.518E+00(1.104E-01)
4.8 -- 4.9	4.304E+00(2.379E-01)	2.957E+00(1.586E-01)	2.291E+00(1.060E-01)
4.9 -- 5.0	3.320E+00(2.190E-01)	2.531E+00(1.499E-01)	2.297E+00(1.062E-01)
5.0 -- 5.1	3.284E+00(2.183E-01)	2.476E+00(1.488E-01)	2.226E+00(1.048E-01)
5.1 -- 5.2	2.873E+00(2.098E-01)	2.263E+00(1.442E-01)	2.466E+00(1.094E-01)
5.2 -- 5.3	2.584E+00(2.037E-01)	2.776E+00(1.550E-01)	2.499E+00(1.100E-01)
5.3 -- 5.4	2.796E+00(2.082E-01)	2.459E+00(1.484E-01)	2.904E+00(1.174E-01)
5.4 -- 5.5	3.257E+00(2.177E-01)	2.637E+00(1.521E-01)	3.633E+00(1.296E-01)
5.5 -- 5.6	3.169E+00(2.159E-01)	3.185E+00(1.631E-01)	6.261E+00(1.664E-01)
5.6 -- 5.7	3.244E+00(2.174E-01)	4.677E+00(1.897E-01)	1.961E+01(2.882E-01)
5.7 -- 5.8	4.290E+00(2.377E-01)	9.139E+00(2.532E-01)	2.950E+01(3.522E-01)
5.8 -- 5.9	6.314E+00(2.725E-01)	2.514E+01(4.062E-01)	7.701E+00(1.835E-01)
5.9 -- 6.0	1.908E+01(4.318E-01)	2.397E+01(3.970E-01)	1.660E+00(9.288E-02)

<< $^{12}C(p,xp')$ E_p = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** I-2

Ep' (MeV)	20 deg.	30 deg.	40 deg.
6.0 -- 6.1	3.564E+01(5.762E-01)	4.412E+00(1.853E-01)	1.119E+00(7.989E-02)
6.1 -- 6.2	1.001E+01(3.267E-01)	1.523E+00(1.270E-01)	7.261E-01(6.893E-02)
6.2 -- 6.3	2.235E+00(1.960E-01)	9.449E-01(1.117E-01)	6.317E-01(6.603E-02)
6.3 -- 6.4	1.447E+00(1.775E-01)	6.922E-01(1.043E-01)	4.702E-01(6.075E-02)
6.4 -- 6.5	1.038E+00(1.670E-01)	4.145E-01(9.555E-02)	5.010E-01(6.179E-02)
6.5 -- 6.6	7.758E-01(1.600E-01)	3.381E-01(9.300E-02)	5.719E-01(6.413E-02)
6.6 -- 6.7	4.955E-01(1.521E-01)	3.728E-01(9.416E-02)	6.449E-01(6.645E-02)
6.7 -- 6.8	5.440E-01(1.535E-01)	5.728E-01(1.006E-01)	4.531E-01(6.016E-02)
6.8 -- 6.9	7.153E-01(1.583E-01)	6.720E-01(1.037E-01)	2.380E-01(5.223E-02)
6.9 -- 7.0	8.686E-01(1.625E-01)	3.955E-01(9.492E-02)	3.872E-01(5.785E-02)
7.0 -- 7.1	5.348E-01(1.532E-01)	2.816E-01(9.106E-02)	2.758E-01(5.371E-02)
7.1 -- 7.2	2.941E-01(1.461E-01)	3.204E-01(9.239E-02)	3.001E-01(5.464E-02)
7.2 -- 7.3	3.665E-01(1.483E-01)	3.507E-01(9.342E-02)	3.479E-01(5.642E-02)
7.3 -- 7.4	3.563E-01(1.480E-01)	2.689E-01(9.062E-02)	3.145E-01(5.518E-02)
7.4 -- 7.5	4.197E-01(1.499E-01)	2.192E-01(8.887E-02)	3.113E-01(5.506E-02)
7.5 -- 7.6	1.417E-01(1.415E-01)	3.284E-01(9.267E-02)	3.909E-01(5.798E-02)
7.6 -- 7.7	5.742E-01(1.543E-01)	3.623E-01(9.381E-02)	8.364E-01(7.218E-02)
7.7 -- 7.8	5.808E-01(1.545E-01)	4.297E-01(9.605E-02)	2.494E+00(1.099E-01)
7.8 -- 7.9	4.546E-01(1.509E-01)	1.139E+00(1.170E-01)	1.347E+00(8.559E-02)
7.9 -- 8.0	8.018E-01(1.607E-01)	2.915E+00(1.578E-01)	7.601E-01(6.995E-02)
8.0 -- 8.1	2.869E+00(2.097E-01)	1.518E+00(1.268E-01)	3.746E-01(5.740E-02)
8.1 -- 8.2	3.884E+00(2.300E-01)	6.929E-01(1.043E-01)	4.408E-01(5.974E-02)
8.2 -- 8.3	1.520E+00(1.792E-01)	2.185E-01(8.885E-02)	6.280E-01(6.592E-02)
8.3 -- 8.4	7.250E-01(1.586E-01)	4.473E-01(9.663E-02)	6.798E-01(6.753E-02)
8.4 -- 8.5	4.102E-01(1.496E-01)	5.803E-01(1.009E-01)	8.549E-01(7.271E-02)
8.5 -- 8.6	4.625E-01(1.511E-01)	8.348E-01(1.085E-01)	7.400E-01(6.935E-02)
8.6 -- 8.7	1.577E+00(1.806E-01)	9.533E-01(1.119E-01)	9.210E-01(7.457E-02)
8.7 -- 8.8	1.619E+00(1.817E-01)	6.788E-01(1.039E-01)	1.249E+00(8.320E-02)
8.8 -- 8.9	1.177E+00(1.706E-01)	5.686E-01(1.005E-01)	3.853E+00(1.331E-01)
8.9 -- 9.0	1.018E+00(1.665E-01)	3.772E-01(9.432E-02)	9.251E+00(2.003E-01)
9.0 -- 9.1	4.507E-01(1.508E-01)	2.936E-01(9.148E-02)	1.151E+01(2.225E-01)
9.1 -- 9.2	1.406E-01(1.415E-01)	4.652E-01(9.722E-02)	1.058E+01(2.136E-01)
9.2 -- 9.3	2.142E-01(1.437E-01)	6.946E-01(1.044E-01)	5.533E+00(1.571E-01)
9.3 -- 9.4	6.397E-01(1.562E-01)	4.869E-01(9.792E-02)	1.632E+00(9.225E-02)
9.4 -- 9.5	9.289E-01(1.641E-01)	3.781E-01(9.435E-02)	1.896E+00(9.801E-02)
9.5 -- 9.6	6.718E-01(1.571E-01)	1.442E+00(1.249E-01)	9.015E-01(7.402E-02)
9.6 -- 9.7	1.375E+00(1.757E-01)	1.543E+00(1.275E-01)	6.764E-01(6.742E-02)
9.7 -- 9.8	2.520E+00(2.023E-01)	7.495E-01(1.060E-01)	9.442E-01(7.521E-02)
9.8 -- 9.9	4.645E-01(1.512E-01)	1.154E+00(1.174E-01)	9.540E-01(7.548E-02)
9.9 -- 10.0	7.312E-01(1.588E-01)	1.257E+00(1.202E-01)	1.317E+00(8.487E-02)
10.0 -- 10.1	1.392E+00(1.761E-01)	1.491E+00(1.262E-01)	1.293E+00(8.429E-02)
10.1 -- 10.2	1.436E+00(1.772E-01)	2.110E+00(1.408E-01)	1.533E+00(9.000E-02)
10.2 -- 10.3	1.694E+00(1.835E-01)	2.212E+00(1.431E-01)	1.596E+00(9.142E-02)
10.3 -- 10.4	2.351E+00(1.986E-01)	2.548E+00(1.503E-01)	1.954E+00(9.923E-02)
10.4 -- 10.5	2.105E+00(1.931E-01)	2.781E+00(1.551E-01)	2.358E+00(1.073E-01)
10.5 -- 10.6	2.538E+00(2.027E-01)	3.185E+00(1.631E-01)	3.050E+00(1.200E-01)
10.6 -- 10.7	2.638E+00(2.049E-01)	3.520E+00(1.695E-01)	3.922E+00(1.342E-01)
10.7 -- 10.8	3.274E+00(2.181E-01)	4.572E+00(1.880E-01)	6.294E+00(1.669E-01)
10.8 -- 10.9	3.326E+00(2.192E-01)	6.131E+00(2.125E-01)	2.706E+01(3.376E-01)
10.9 -- 11.0	4.507E+00(2.417E-01)	1.082E+01(2.733E-01)	1.418E+02(7.679E-01)

<< $^{12}C(p,xp')$ E_p = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** I-3

Ep' (MeV)	20 deg.	30 deg.	40 deg.
11.0 -- 11.1	6.061E+00(2.685E-01)	2.903E+01(4.353E-01)	9.894E+01(6.419E-01)
11.1 -- 11.2	8.937E+00(3.120E-01)	1.346E+02(9.248E-01)	3.897E+00(1.338E-01)
11.2 -- 11.3	3.453E+01(5.677E-01)	1.755E+02(1.055E+00)	8.594E-01(7.284E-02)
11.3 -- 11.4	2.356E+02(1.445E+00)	1.551E+01(3.229E-01)	5.347E-01(6.292E-02)
11.4 -- 11.5	1.762E+02(1.252E+00)	2.350E+00(1.461E-01)	4.754E-01(6.094E-02)
11.5 -- 11.6	4.109E+00(2.343E-01)	6.199E+00(2.136E-01)	5.498E-01(6.342E-02)
11.6 -- 11.7	3.085E-01(1.467E-01)	1.301E+01(2.976E-01)	5.353E-01(6.294E-02)
11.7 -- 11.8	1.605E-01(1.422E-01)	1.333E+01(3.009E-01)	6.062E-01(6.524E-02)
11.8 -- 11.9	3.233E-01(1.471E-01)	9.257E+00(2.547E-01)	3.523E-01(5.660E-02)
11.9 -- 12.0	5.449E-01(1.536E-01)	3.025E+00(1.600E-01)	1.783E-01(4.982E-02)
12.0 -- 12.1	4.993E-01(1.523E-01)	7.370E-01(1.057E-01)	2.031E-01(5.084E-02)
12.1 -- 12.2	1.096E+00(1.686E-01)	4.060E-01(9.532E-02)	1.784E-01(4.982E-02)
12.2 -- 12.3	6.109E-01(1.555E-01)	2.263E-01(8.918E-02)	2.283E-01(5.186E-02)
12.3 -- 12.4	5.329E-01(1.533E-01)	2.866E-01(9.129E-02)	2.871E-01(5.416E-02)
12.4 -- 12.5	3.545E-01(1.481E-01)	2.964E-01(9.163E-02)	2.246E-01(5.171E-02)
12.5 -- 12.6	4.340E-01(1.504E-01)	3.652E-01(9.397E-02)	1.769E-01(4.976E-02)
12.6 -- 12.7	4.687E-01(1.515E-01)	3.605E-01(9.381E-02)	1.936E-01(5.045E-02)
12.7 -- 12.8	6.296E-01(1.561E-01)	3.860E-01(9.467E-02)	1.696E-01(4.946E-02)
12.8 -- 12.9	5.578E-01(1.540E-01)	3.650E-01(9.397E-02)	1.640E-01(4.922E-02)
12.9 -- 13.0	9.380E-01(1.645E-01)	4.207E-01(9.582E-02)	1.849E-01(5.010E-02)
13.0 -- 13.1	5.314E-01(1.533E-01)	2.792E-01(9.105E-02)	2.128E-01(5.124E-02)
13.1 -- 13.2	5.853E-01(1.548E-01)	3.754E-01(9.433E-02)	2.243E-01(5.170E-02)
13.2 -- 13.3	8.753E-01(1.629E-01)	4.306E-01(9.616E-02)	2.314E-01(5.199E-02)
13.3 -- 13.4	5.478E-01(1.538E-01)	3.388E-01(9.310E-02)	4.120E-01(5.875E-02)
13.4 -- 13.5	8.764E-01(1.629E-01)	5.201E-01(9.905E-02)	7.472E-01(6.959E-02)
13.5 -- 13.6	9.148E-01(1.639E-01)	8.135E-01(1.080E-01)	6.595E-01(6.692E-02)
13.6 -- 13.7	1.421E+00(1.770E-01)	1.489E+00(1.262E-01)	2.712E-01(5.356E-02)
13.7 -- 13.8	3.070E+00(2.141E-01)	2.044E+00(1.394E-01)	3.035E-01(5.479E-02)
13.8 -- 13.9	1.536E+01(3.922E-01)	1.202E+00(1.188E-01)	4.330E-01(5.949E-02)
13.9 -- 14.0	2.442E+01(4.832E-01)	9.810E-01(1.128E-01)	1.287E+00(8.416E-02)
14.0 -- 14.1	1.576E+01(3.967E-01)	1.582E+00(1.285E-01)	2.785E+00(1.153E-01)
14.1 -- 14.2	3.298E+00(2.187E-01)	3.414E+00(1.675E-01)	2.846E+00(1.164E-01)
14.2 -- 14.3	1.285E+00(1.736E-01)	6.875E+00(2.233E-01)	3.423E+00(1.263E-01)
14.3 -- 14.4	3.653E+00(2.257E-01)	9.110E+00(2.529E-01)	4.628E+00(1.447E-01)
14.4 -- 14.5	1.195E+01(3.520E-01)	1.036E+01(2.680E-01)	5.204E+00(1.527E-01)
14.5 -- 14.6	1.467E+01(3.844E-01)	1.295E+01(2.970E-01)	6.496E+00(1.694E-01)
14.6 -- 14.7	1.541E+01(3.928E-01)	1.371E+01(3.049E-01)	6.742E+00(1.723E-01)
14.7 -- 14.8	2.084E+01(4.494E-01)	1.532E+01(3.212E-01)	8.134E+00(1.884E-01)
14.8 -- 14.9	2.038E+01(4.449E-01)	1.846E+01(3.506E-01)	1.011E+01(2.090E-01)
14.9 -- 15.0	2.485E+01(4.871E-01)	2.092E+01(3.720E-01)	1.311E+01(2.369E-01)
15.0 -- 15.1	2.725E+01(5.083E-01)	2.559E+01(4.097E-01)	1.813E+01(2.774E-01)
15.1 -- 15.2	3.297E+01(5.555E-01)	3.154E+01(4.532E-01)	3.707E+01(3.943E-01)
15.2 -- 15.3	3.694E+01(5.862E-01)	4.429E+01(5.346E-01)	2.373E+02(9.928E-01)
15.3 -- 15.4	4.593E+01(6.500E-01)	7.712E+01(7.019E-01)	7.196E+02(1.728E+00)
15.4 -- 15.5	6.143E+01(7.475E-01)	2.217E+02(1.185E+00)	2.134E+02(9.416E-01)
15.5 -- 15.6	9.224E+01(9.108E-01)	1.032E+03(2.552E+00)	1.163E+01(2.235E-01)
15.6 -- 15.7	2.554E+02(1.505E+00)	1.425E+03(2.999E+00)	3.015E+00(1.194E-01)
15.7 -- 15.8	2.173E+03(4.373E+00)	1.498E+02(9.751E-01)	1.806E+00(9.610E-02)
15.8 -- 15.9	3.220E+03(5.321E+00)	8.402E+00(2.440E-01)	1.299E+00(8.444E-02)
15.9 -- 16.0	2.325E+02(1.436E+00)	3.447E+00(1.682E-01)	9.170E-01(7.449E-02)

<< $^{12}C(p,xp')$ E_p = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** I-4

Ep' (MeV)	20 deg.	30 deg.	40 deg.
16.0 -- 16.1	6.327E+00(2.730E-01)	1.513E+00(1.268E-01)	6.298E-01(6.601E-02)
16.1 -- 16.2	1.805E+00(1.864E-01)	1.048E+00(1.147E-01)	4.605E-01(6.046E-02)
16.2 -- 16.3	6.594E-01(1.572E-01)	7.453E-01(1.061E-01)	3.621E-01(5.699E-02)
16.3 -- 16.4	4.420E-01(1.510E-01)	4.829E-01(9.795E-02)	3.459E-01(5.640E-02)
16.4 -- 16.5	1.576E-01(1.425E-01)	3.355E-01(9.309E-02)	2.084E-01(5.110E-02)
16.5 -- 16.6	0.000E+00(0.000E+00)	1.443E-01(8.637E-02)	1.485E-01(4.860E-02)
16.6 -- 16.7	0.000E+00(0.000E+00)	1.134E-01(8.524E-02)	9.419E-02(4.623E-02)
16.7 -- 16.8	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	5.891E-02(4.462E-02)
16.8 -- 16.9	0.000E+00(0.000E+00)	2.200E-02(8.180E-02)	3.968E-02(4.372E-02)
16.9 -- 17.0	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	5.804E-03(4.209E-02)

<< $^{12}C(p,xp')$ E_p = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** II-1

Ep' (MeV)	50 deg.	60 deg.	70 deg.
1.0 -- 1.1	1.480E+00(5.340E-02)	9.318E-01(4.099E-02)	7.765E-01(3.776E-02)
1.1 -- 1.2	1.912E+00(5.975E-02)	1.462E+00(5.068E-02)	1.186E+00(4.594E-02)
1.2 -- 1.3	3.003E+00(7.345E-02)	2.757E+00(6.885E-02)	2.777E+00(6.914E-02)
1.3 -- 1.4	3.350E+00(7.727E-02)	3.277E+00(7.491E-02)	3.358E+00(7.586E-02)
1.4 -- 1.5	3.536E+00(7.923E-02)	3.484E+00(7.718E-02)	4.005E+00(8.269E-02)
1.5 -- 1.6	3.776E+00(8.169E-02)	3.779E+00(8.032E-02)	5.082E+00(9.297E-02)
1.6 -- 1.7	3.755E+00(8.143E-02)	3.756E+00(8.006E-02)	7.130E+00(1.099E-01)
1.7 -- 1.8	3.971E+00(8.359E-02)	3.689E+00(7.935E-02)	8.748E+00(1.216E-01)
1.8 -- 1.9	3.918E+00(8.302E-02)	3.481E+00(7.710E-02)	6.949E+00(1.085E-01)
1.9 -- 2.0	3.589E+00(7.959E-02)	3.234E+00(7.435E-02)	4.292E+00(8.550E-02)
2.0 -- 2.1	3.404E+00(7.758E-02)	3.112E+00(7.295E-02)	5.510E+00(9.671E-02)
2.1 -- 2.2	3.490E+00(7.846E-02)	3.349E+00(7.562E-02)	1.015E+01(1.309E-01)
2.2 -- 2.3	3.336E+00(7.677E-02)	7.688E+00(1.140E-01)	3.435E+00(7.659E-02)
2.3 -- 2.4	4.398E+00(8.758E-02)	8.002E+00(1.163E-01)	2.696E+00(6.799E-02)
2.4 -- 2.5	9.671E+00(1.285E-01)	2.988E+00(7.146E-02)	2.515E+00(6.571E-02)
2.5 -- 2.6	4.039E+00(8.400E-02)	2.816E+00(6.939E-02)	2.718E+00(6.823E-02)
2.6 -- 2.7	2.759E+00(7.002E-02)	2.802E+00(6.921E-02)	2.637E+00(6.722E-02)
2.7 -- 2.8	2.837E+00(7.091E-02)	2.771E+00(6.882E-02)	2.428E+00(6.454E-02)
2.8 -- 2.9	2.770E+00(7.008E-02)	2.633E+00(6.711E-02)	2.471E+00(6.508E-02)
2.9 -- 3.0	2.838E+00(7.085E-02)	2.650E+00(6.731E-02)	2.805E+00(6.924E-02)
3.0 -- 3.1	2.867E+00(7.116E-02)	3.019E+00(7.176E-02)	2.894E+00(7.031E-02)
3.1 -- 3.2	2.737E+00(6.958E-02)	2.842E+00(6.964E-02)	2.271E+00(6.241E-02)
3.2 -- 3.3	2.750E+00(6.970E-02)	2.853E+00(6.977E-02)	1.794E+00(5.561E-02)
3.3 -- 3.4	2.903E+00(7.149E-02)	2.356E+00(6.349E-02)	1.796E+00(5.563E-02)
3.4 -- 3.5	2.749E+00(6.962E-02)	2.300E+00(6.274E-02)	1.640E+00(5.321E-02)
3.5 -- 3.6	2.246E+00(6.325E-02)	3.229E+00(7.412E-02)	1.542E+00(5.164E-02)
3.6 -- 3.7	2.092E+00(6.113E-02)	5.317E+00(9.486E-02)	1.897E+00(5.710E-02)
3.7 -- 3.8	1.996E+00(5.977E-02)	8.464E+00(1.195E-01)	1.854E+00(5.645E-02)
3.8 -- 3.9	1.946E+00(5.900E-02)	9.371E+00(1.257E-01)	2.022E+00(5.889E-02)
3.9 -- 4.0	1.820E+00(5.718E-02)	7.075E+00(1.093E-01)	2.226E+00(6.172E-02)
4.0 -- 4.1	1.880E+00(5.805E-02)	4.246E+00(8.484E-02)	2.162E+00(6.084E-02)
4.1 -- 4.2	2.146E+00(6.179E-02)	2.411E+00(6.416E-02)	1.771E+00(5.518E-02)
4.2 -- 4.3	2.574E+00(6.735E-02)	2.108E+00(6.006E-02)	1.582E+00(5.223E-02)
4.3 -- 4.4	2.607E+00(6.776E-02)	1.698E+00(5.404E-02)	1.365E+00(4.861E-02)
4.4 -- 4.5	2.075E+00(6.081E-02)	1.640E+00(5.313E-02)	1.315E+00(4.775E-02)
4.5 -- 4.6	1.833E+00(5.738E-02)	1.442E+00(4.989E-02)	1.390E+00(4.905E-02)
4.6 -- 4.7	1.820E+00(5.718E-02)	1.413E+00(4.940E-02)	1.508E+00(5.104E-02)
4.7 -- 4.8	1.852E+00(5.765E-02)	1.523E+00(5.124E-02)	1.783E+00(5.537E-02)
4.8 -- 4.9	1.748E+00(5.611E-02)	1.675E+00(5.368E-02)	2.117E+00(6.021E-02)
4.9 -- 5.0	1.887E+00(5.816E-02)	1.807E+00(5.569E-02)	3.764E+00(7.995E-02)
5.0 -- 5.1	2.157E+00(6.193E-02)	2.234E+00(6.180E-02)	2.017E+01(1.842E-01)
5.1 -- 5.2	2.239E+00(6.304E-02)	3.159E+00(7.329E-02)	2.921E+01(2.216E-01)
5.2 -- 5.3	2.804E+00(7.015E-02)	1.066E+01(1.341E-01)	3.710E+00(7.938E-02)
5.3 -- 5.4	4.823E+00(9.117E-02)	3.608E+01(2.463E-01)	9.488E-01(4.081E-02)
5.4 -- 5.5	1.456E+01(1.570E-01)	1.022E+01(1.313E-01)	4.906E-01(2.993E-02)
5.5 -- 5.6	3.035E+01(2.262E-01)	1.485E+00(5.061E-02)	3.562E-01(2.589E-02)
5.6 -- 5.7	1.024E+01(1.319E-01)	6.758E-01(3.469E-02)	2.817E-01(2.335E-02)
5.7 -- 5.8	1.665E+00(5.486E-02)	4.467E-01(2.861E-02)	2.330E-01(2.152E-02)
5.8 -- 5.9	9.947E-01(4.341E-02)	3.508E-01(2.564E-02)	1.981E-01(2.012E-02)
5.9 -- 6.0	9.465E-01(4.247E-02)	2.394E-01(2.169E-02)	1.719E-01(1.899E-02)

<< $^{12}C(p,xp')$ $E_p = 16$ MeV >> *** DDX (error) in [mb/MeV/sr] *** II-2

Ep' (MeV)	50 deg.	60 deg.	70 deg.
6.0 -- 6.1	1.038E+00(4.424E-02)	2.454E-01(2.192E-02)	1.462E-01(1.782E-02)
6.1 -- 6.2	2.620E+00(6.792E-02)	2.443E-01(2.188E-02)	5.051E-01(3.034E-02)
6.2 -- 6.3	6.587E+00(1.062E-01)	2.222E-01(2.101E-02)	2.865E-01(2.352E-02)
6.3 -- 6.4	9.709E+00(1.285E-01)	5.790E-01(3.226E-02)	9.152E-02(1.503E-02)
6.4 -- 6.5	9.121E+00(1.246E-01)	2.822E-01(2.329E-02)	9.019E-02(1.495E-02)
6.5 -- 6.6	5.864E+00(1.003E-01)	1.221E-01(1.654E-02)	7.748E-02(1.422E-02)
6.6 -- 6.7	1.430E+00(5.114E-02)	1.122E-01(1.603E-02)	7.495E-02(1.407E-02)
6.7 -- 6.8	2.710E-01(2.587E-02)	9.714E-02(1.522E-02)	3.610E-02(1.152E-02)
6.8 -- 6.9	1.997E-01(2.344E-02)	1.005E-01(1.540E-02)	8.519E-02(1.467E-02)
6.9 -- 7.0	1.803E-01(2.274E-02)	6.895E-02(1.357E-02)	6.641E-01(3.446E-02)
7.0 -- 7.1	1.593E-01(2.195E-02)	8.036E-02(1.426E-02)	2.937E+00(7.073E-02)
7.1 -- 7.2	1.337E-01(2.094E-02)	1.249E-01(1.668E-02)	4.516E-01(2.882E-02)
7.2 -- 7.3	1.343E-01(2.097E-02)	1.506E+00(5.096E-02)	3.527E-01(2.577E-02)
7.3 -- 7.4	1.897E-01(2.308E-02)	2.488E+00(6.516E-02)	1.031E-01(1.566E-02)
7.4 -- 7.5	8.652E-01(4.083E-02)	2.881E-01(2.350E-02)	3.922E-02(1.175E-02)
7.5 -- 7.6	2.260E+00(6.331E-02)	4.274E-01(2.804E-02)	6.576E-02(1.351E-02)
7.6 -- 7.7	6.576E-01(3.631E-02)	1.223E-01(1.655E-02)	2.433E-02(1.063E-02)
7.7 -- 7.8	3.486E-01(2.827E-02)	8.269E-02(1.440E-02)	4.908E-02(1.243E-02)
7.8 -- 7.9	1.997E-01(2.344E-02)	5.907E-02(1.295E-02)	3.580E-01(2.595E-02)
7.9 -- 8.0	1.752E-01(2.255E-02)	6.075E-02(1.306E-02)	2.225E-01(2.111E-02)
8.0 -- 8.1	1.499E-01(2.158E-02)	2.524E-01(2.219E-02)	2.144E-01(2.079E-02)
8.1 -- 8.2	1.562E-01(2.183E-02)	3.758E-01(2.645E-02)	1.408E-01(1.757E-02)
8.2 -- 8.3	4.504E-01(3.115E-02)	1.924E-01(1.979E-02)	6.009E-02(1.316E-02)
8.3 -- 8.4	3.230E-01(2.750E-02)	1.998E-01(2.010E-02)	5.570E-02(1.287E-02)
8.4 -- 8.5	2.835E-01(2.627E-02)	6.755E-02(1.349E-02)	3.438E-02(1.140E-02)
8.5 -- 8.6	2.226E-01(2.425E-02)	1.119E-01(1.601E-02)	5.195E-02(1.263E-02)
8.6 -- 8.7	1.051E-01(1.976E-02)	7.722E-02(1.408E-02)	4.110E-02(1.188E-02)
8.7 -- 8.8	1.331E-01(2.092E-02)	5.727E-02(1.283E-02)	2.799E-01(2.328E-02)
8.8 -- 8.9	2.006E-01(2.347E-02)	7.693E-02(1.406E-02)	1.433E+00(4.979E-02)
8.9 -- 9.0	1.254E-01(2.061E-02)	1.902E-01(1.969E-02)	2.005E-01(2.022E-02)
9.0 -- 9.1	1.213E-01(2.044E-02)	1.499E+00(5.084E-02)	4.958E-02(1.247E-02)
9.1 -- 9.2	4.936E-01(3.229E-02)	6.216E-01(3.335E-02)	7.943E-02(1.434E-02)
9.2 -- 9.3	1.621E+00(5.418E-02)	1.208E-01(1.647E-02)	7.607E-02(1.414E-02)
9.3 -- 9.4	6.885E-01(3.702E-02)	9.029E-02(1.484E-02)	1.126E-01(1.616E-02)
9.4 -- 9.5	3.869E-01(2.939E-02)	1.226E-01(1.657E-02)	9.128E-02(1.501E-02)
9.5 -- 9.6	4.144E-01(3.017E-02)	1.002E-01(1.539E-02)	1.130E-01(1.618E-02)
9.6 -- 9.7	4.920E-01(3.225E-02)	1.590E-01(1.831E-02)	1.776E-01(1.925E-02)
9.7 -- 9.8	5.309E-01(3.325E-02)	1.713E-01(1.887E-02)	2.193E-01(2.099E-02)
9.8 -- 9.9	6.882E-01(3.701E-02)	2.196E-01(2.091E-02)	3.419E-01(2.542E-02)
9.9 -- 10.0	8.417E-01(4.034E-02)	3.104E-01(2.428E-02)	1.108E+00(4.396E-02)
10.0 -- 10.1	9.771E-01(4.307E-02)	3.833E-01(2.668E-02)	3.233E+01(2.331E-01)
10.1 -- 10.2	1.138E+00(4.610E-02)	6.866E-01(3.495E-02)	5.100E+01(2.928E-01)
10.2 -- 10.3	1.517E+00(5.255E-02)	1.291E+00(4.729E-02)	1.171E+00(4.514E-02)
10.3 -- 10.4	2.144E+00(6.175E-02)	2.273E+01(1.955E-01)	1.256E-01(1.682E-02)
10.4 -- 10.5	3.242E+00(7.521E-02)	1.002E+02(4.102E-01)	6.281E-02(1.333E-02)
10.5 -- 10.6	8.922E+00(1.233E-01)	8.402E+00(1.191E-01)	3.570E-02(1.149E-02)
10.6 -- 10.7	6.953E+01(3.420E-01)	2.407E-01(2.174E-02)	4.602E-02(1.222E-02)
10.7 -- 10.8	1.009E+02(4.120E-01)	1.683E-01(1.874E-02)	1.537E-01(1.817E-02)
10.8 -- 10.9	8.212E+00(1.183E-01)	1.258E-01(1.673E-02)	1.368E-01(1.738E-02)
10.9 -- 11.0	6.589E-01(3.634E-02)	8.288E-02(1.441E-02)	2.461E-01(2.203E-02)

<< $^{12}C(p,xp')$ E_p = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** II-3

Ep' (MeV)	50 deg.	60 deg.	70 deg.
11.0 -- 11.1	3.904E-01(2.949E-02)	2.095E-01(2.050E-02)	4.013E-02(1.181E-02)
11.1 -- 11.2	2.962E-01(2.667E-02)	1.788E-01(1.920E-02)	6.695E-02(1.359E-02)
11.2 -- 11.3	2.857E-01(2.634E-02)	3.408E-01(2.531E-02)	1.821E-02(1.014E-02)
11.3 -- 11.4	4.249E-01(3.046E-02)	8.218E-02(1.437E-02)	1.921E-02(1.022E-02)
11.4 -- 11.5	3.391E-01(2.799E-02)	3.357E-02(1.117E-02)	8.852E-03(9.330E-03)
11.5 -- 11.6	3.449E-01(2.817E-02)	7.792E-02(1.412E-02)	3.264E-02(1.127E-02)
11.6 -- 11.7	1.226E-01(2.050E-02)	5.819E-02(1.289E-02)	1.725E-02(1.006E-02)
11.7 -- 11.8	1.096E-01(1.995E-02)	4.336E-02(1.189E-02)	9.065E-03(9.349E-03)
11.8 -- 11.9	7.129E-02(1.827E-02)	7.568E-02(1.398E-02)	7.652E-03(9.221E-03)
11.9 -- 12.0	1.092E-01(1.994E-02)	8.513E-03(9.100E-03)	2.578E-02(1.075E-02)
12.0 -- 12.1	1.146E-01(2.017E-02)	3.034E-02(1.093E-02)	3.823E-03(8.866E-03)
12.1 -- 12.2	9.189E-02(1.920E-02)	1.161E-02(9.381E-03)	1.229E-02(9.634E-03)
12.2 -- 12.3	3.937E-02(1.674E-02)	1.006E-02(9.242E-03)	1.552E-02(9.911E-03)
12.3 -- 12.4	4.248E-02(1.690E-02)	0.000E+00(0.000E+00)	6.770E-02(1.363E-02)
12.4 -- 12.5	4.098E-02(1.682E-02)	1.479E-02(9.662E-03)	6.944E-02(1.374E-02)
12.5 -- 12.6	4.098E-02(1.682E-02)	1.690E-02(9.843E-03)	1.595E-02(9.948E-03)
12.6 -- 12.7	3.744E-02(1.665E-02)	2.529E-02(1.053E-02)	5.636E-03(9.036E-03)
12.7 -- 12.8	1.602E-02(1.553E-02)	5.313E-02(1.256E-02)	1.061E-02(9.487E-03)
12.8 -- 12.9	5.035E-02(1.728E-02)	8.255E-02(1.439E-02)	1.565E-02(9.923E-03)
12.9 -- 13.0	5.961E-02(1.773E-02)	3.038E-02(1.093E-02)	7.429E-03(9.201E-03)
13.0 -- 13.1	1.306E-01(2.082E-02)	3.342E-03(8.610E-03)	1.565E-02(9.923E-03)
13.1 -- 13.2	2.106E-01(2.383E-02)	8.488E-03(9.098E-03)	5.909E-02(1.309E-02)
13.2 -- 13.3	1.371E-01(2.108E-02)	3.335E-02(1.116E-02)	4.415E-02(1.210E-02)
13.3 -- 13.4	6.626E-02(1.804E-02)	1.693E-02(9.847E-03)	7.112E-02(1.384E-02)
13.4 -- 13.5	5.052E-02(1.729E-02)	2.496E-02(1.051E-02)	8.267E-02(1.453E-02)
13.5 -- 13.6	1.043E-01(1.973E-02)	4.878E-02(1.226E-02)	1.418E-01(1.762E-02)
13.6 -- 13.7	2.546E-01(2.533E-02)	4.517E-02(1.202E-02)	1.464E-01(1.783E-02)
13.7 -- 13.8	5.732E-01(3.430E-02)	8.532E-02(1.455E-02)	1.512E-01(1.806E-02)
13.8 -- 13.9	5.999E-01(3.495E-02)	1.126E-01(1.605E-02)	1.920E-01(1.986E-02)
13.9 -- 14.0	7.735E-01(3.890E-02)	1.392E-01(1.739E-02)	3.188E-01(2.465E-02)
14.0 -- 14.1	1.004E+00(4.359E-02)	1.509E-01(1.794E-02)	5.165E-01(3.065E-02)
14.1 -- 14.2	1.214E+00(4.746E-02)	1.793E-01(1.922E-02)	1.763E+00(5.506E-02)
14.2 -- 14.3	1.494E+00(5.217E-02)	2.833E-01(2.333E-02)	4.975E+01(2.891E-01)
14.3 -- 14.4	1.676E+00(5.503E-02)	3.689E-01(2.623E-02)	8.019E+01(3.670E-01)
14.4 -- 14.5	2.085E+00(6.095E-02)	7.474E-01(3.638E-02)	3.962E+00(8.201E-02)
14.5 -- 14.6	2.840E+00(7.059E-02)	2.876E+00(6.998E-02)	7.085E-01(3.552E-02)
14.6 -- 14.7	3.898E+00(8.221E-02)	6.216E+01(3.232E-01)	3.547E+00(7.764E-02)
14.7 -- 14.8	5.736E+00(9.922E-02)	6.082E+01(3.197E-01)	7.550E+00(1.129E-01)
14.8 -- 14.9	1.461E+01(1.573E-01)	2.246E+00(6.197E-02)	2.752E-01(2.311E-02)
14.9 -- 15.0	1.098E+02(4.297E-01)	2.669E+00(6.745E-02)	2.598E-02(1.076E-02)
15.0 -- 15.1	2.234E+02(6.126E-01)	4.582E+00(8.810E-02)	1.539E-01(1.818E-02)
15.1 -- 15.2	2.989E+01(2.245E-01)	2.068E-01(2.039E-02)	2.032E-01(2.033E-02)
15.2 -- 15.3	3.062E+00(7.317E-02)	1.518E-01(1.798E-02)	1.328E-01(1.718E-02)
15.3 -- 15.4	1.293E+00(4.884E-02)	2.355E-01(2.154E-02)	1.129E-01(1.618E-02)
15.4 -- 15.5	5.669E-01(3.415E-02)	2.418E-01(2.178E-02)	1.758E-01(1.917E-02)
15.5 -- 15.6	4.917E-01(3.225E-02)	4.337E-01(2.823E-02)	5.859E-03(9.057E-03)
15.6 -- 15.7	6.796E-01(3.681E-02)	1.326E-01(1.706E-02)	3.894E-03(8.873E-03)
15.7 -- 15.8	3.716E-01(2.895E-02)	1.857E-02(9.986E-03)	6.571E-04(8.561E-03)
15.8 -- 15.9	1.890E-01(2.306E-02)	6.757E-03(8.937E-03)	0.000E+00(0.000E+00)
15.9 -- 16.0	1.331E-01(2.092E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)

<< $^{12}C(p,xp')$ E_p = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** II-4

Ep' (MeV)	50 deg.	60 deg.	70 deg.
16.0 -- 16.1	6.968E-02(1.820E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
16.1 -- 16.2	5.264E-02(1.740E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
16.2 -- 16.3	2.242E-02(1.587E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
16.3 -- 16.4	1.742E-02(1.561E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
16.4 -- 16.5	1.560E-02(1.551E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
16.5 -- 16.6	2.917E-02(1.623E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
16.6 -- 16.7	1.729E-02(1.560E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
16.7 -- 16.8	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
16.8 -- 16.9	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
16.9 -- 17.0	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)

<< $^{12}C(p,xp')$ E_p = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** III-1

Ep' (MeV)	80 deg.	90 deg.	100 deg.
1.0 -- 1.1	7.986E-01(3.918E-02)	8.651E-01(4.122E-02)	8.423E-01(4.090E-02)
1.1 -- 1.2	1.233E+00(4.754E-02)	1.435E+00(5.149E-02)	1.356E+00(5.030E-02)
1.2 -- 1.3	2.673E+00(6.837E-02)	2.661E+00(6.860E-02)	2.509E+00(6.679E-02)
1.3 -- 1.4	3.151E+00(7.398E-02)	2.888E+00(7.129E-02)	2.700E+00(6.912E-02)
1.4 -- 1.5	3.239E+00(7.496E-02)	2.800E+00(7.022E-02)	2.728E+00(6.942E-02)
1.5 -- 1.6	3.140E+00(7.382E-02)	2.848E+00(7.075E-02)	3.911E+00(8.247E-02)
1.6 -- 1.7	2.989E+00(7.205E-02)	3.276E+00(7.563E-02)	7.224E+00(1.112E-01)
1.7 -- 1.8	3.107E+00(7.340E-02)	7.179E+00(1.108E-01)	4.645E+00(8.958E-02)
1.8 -- 1.9	4.052E+00(8.349E-02)	6.294E+00(1.038E-01)	2.623E+00(6.802E-02)
1.9 -- 2.0	9.622E+00(1.277E-01)	2.797E+00(7.002E-02)	2.457E+00(6.590E-02)
2.0 -- 2.1	4.599E+00(8.878E-02)	2.497E+00(6.631E-02)	2.452E+00(6.580E-02)
2.1 -- 2.2	2.660E+00(6.800E-02)	2.420E+00(6.529E-02)	2.440E+00(6.562E-02)
2.2 -- 2.3	2.674E+00(6.815E-02)	2.354E+00(6.441E-02)	2.456E+00(6.580E-02)
2.3 -- 2.4	2.597E+00(6.718E-02)	2.443E+00(6.553E-02)	2.516E+00(6.653E-02)
2.4 -- 2.5	2.482E+00(6.570E-02)	2.391E+00(6.484E-02)	2.871E+00(7.084E-02)
2.5 -- 2.6	2.404E+00(6.468E-02)	2.520E+00(6.647E-02)	2.611E+00(6.766E-02)
2.6 -- 2.7	2.343E+00(6.385E-02)	2.603E+00(6.747E-02)	2.001E+00(5.959E-02)
2.7 -- 2.8	2.782E+00(6.937E-02)	2.304E+00(6.362E-02)	1.544E+00(5.272E-02)
2.8 -- 2.9	2.611E+00(6.726E-02)	1.680E+00(5.474E-02)	1.367E+00(4.980E-02)
2.9 -- 3.0	2.322E+00(6.352E-02)	1.462E+00(5.125E-02)	1.388E+00(5.010E-02)
3.0 -- 3.1	1.859E+00(5.705E-02)	1.577E+00(5.308E-02)	1.741E+00(5.568E-02)
3.1 -- 3.2	1.501E+00(5.150E-02)	1.404E+00(5.023E-02)	1.919E+00(5.828E-02)
3.2 -- 3.3	1.467E+00(5.091E-02)	1.607E+00(5.350E-02)	2.441E+00(6.535E-02)
3.3 -- 3.4	1.483E+00(5.115E-02)	1.954E+00(5.866E-02)	3.036E+00(7.256E-02)
3.4 -- 3.5	1.702E+00(5.461E-02)	2.341E+00(6.394E-02)	2.829E+00(7.011E-02)
3.5 -- 3.6	1.834E+00(5.657E-02)	2.789E+00(6.955E-02)	2.181E+00(6.183E-02)
3.6 -- 3.7	2.225E+00(6.210E-02)	2.613E+00(6.736E-02)	1.680E+00(5.458E-02)
3.7 -- 3.8	2.362E+00(6.390E-02)	2.031E+00(5.966E-02)	1.410E+00(5.023E-02)
3.8 -- 3.9	2.335E+00(6.353E-02)	1.517E+00(5.190E-02)	1.396E+00(4.996E-02)
3.9 -- 4.0	1.791E+00(5.586E-02)	1.386E+00(4.971E-02)	1.366E+00(4.944E-02)
4.0 -- 4.1	1.435E+00(5.023E-02)	1.249E+00(4.735E-02)	1.583E+00(5.300E-02)
4.1 -- 4.2	1.283E+00(4.763E-02)	1.332E+00(4.880E-02)	2.163E+00(6.151E-02)
4.2 -- 4.3	1.219E+00(4.648E-02)	1.433E+00(5.051E-02)	7.457E+00(1.126E-01)
4.3 -- 4.4	1.290E+00(4.774E-02)	1.829E+00(5.671E-02)	1.601E+01(1.644E-01)
4.4 -- 4.5	1.437E+00(5.027E-02)	3.051E+00(7.258E-02)	7.653E+00(1.140E-01)
4.5 -- 4.6	1.798E+00(5.597E-02)	1.322E+01(1.494E-01)	3.708E+00(7.985E-02)
4.6 -- 4.7	2.259E+00(6.251E-02)	2.256E+01(1.950E-01)	7.418E-01(3.737E-02)
4.7 -- 4.8	6.358E+00(1.039E-01)	3.849E+00(8.129E-02)	3.759E-01(2.797E-02)
4.8 -- 4.9	2.923E+01(2.218E-01)	9.331E-01(4.137E-02)	2.655E-01(2.443E-02)
4.9 -- 5.0	1.245E+01(1.450E-01)	4.850E-01(3.097E-02)	2.023E-01(2.216E-02)
5.0 -- 5.1	1.538E+00(5.194E-02)	3.162E-01(2.599E-02)	1.610E-01(2.054E-02)
5.1 -- 5.2	6.365E-01(3.439E-02)	2.618E-01(2.417E-02)	1.219E-01(1.887E-02)
5.2 -- 5.3	3.428E-01(2.627E-02)	1.493E-01(1.989E-02)	1.275E-01(1.912E-02)
5.3 -- 5.4	2.624E-01(2.356E-02)	1.268E-01(1.891E-02)	9.352E-02(1.757E-02)
5.4 -- 5.5	1.843E-01(2.058E-02)	1.363E-01(1.933E-02)	1.050E-01(1.811E-02)
5.5 -- 5.6	1.451E-01(1.892E-02)	1.087E-01(1.809E-02)	5.012E-01(3.151E-02)
5.6 -- 5.7	1.547E-01(1.934E-02)	1.437E-01(1.965E-02)	3.348E-01(2.672E-02)
5.7 -- 5.8	1.080E-01(1.720E-02)	5.977E-01(3.389E-02)	4.702E-02(1.519E-02)
5.8 -- 5.9	1.396E-01(1.867E-02)	2.387E-01(2.336E-02)	5.180E-02(1.545E-02)
5.9 -- 6.0	6.403E-01(3.449E-02)	9.897E-02(1.763E-02)	7.561E-02(1.669E-02)

<< $^{12}C(p,xp')$ E_p = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** III-2

Ep' (MeV)	80 deg.	90 deg.	100 deg.
6.0 -- 6.1	2.973E-01(2.477E-02)	6.433E-02(1.590E-02)	1.392E-01(1.963E-02)
6.1 -- 6.2	6.282E-02(1.482E-02)	3.193E-02(1.408E-02)	5.029E-01(3.156E-02)
6.2 -- 6.3	4.254E-02(1.363E-02)	6.538E-02(1.595E-02)	6.249E-01(3.465E-02)
6.3 -- 6.4	6.220E-02(1.479E-02)	2.246E-01(2.284E-02)	7.953E-02(1.689E-02)
6.4 -- 6.5	5.393E-02(1.431E-02)	1.319E+00(4.857E-02)	1.205E-01(1.881E-02)
6.5 -- 6.6	2.850E-02(1.273E-02)	4.332E-01(2.953E-02)	1.167E-01(1.864E-02)
6.6 -- 6.7	3.363E-01(2.606E-02)	1.009E-01(1.772E-02)	6.523E-02(1.616E-02)
6.7 -- 6.8	2.296E+00(6.300E-02)	1.591E-01(2.029E-02)	4.699E-02(1.518E-02)
6.8 -- 6.9	4.484E-01(2.945E-02)	2.180E-02(1.347E-02)	5.156E-02(1.543E-02)
6.9 -- 7.0	1.897E-01(2.080E-02)	3.458E-02(1.424E-02)	3.668E-02(1.460E-02)
7.0 -- 7.1	1.073E-01(1.716E-02)	5.730E-02(1.552E-02)	9.308E-02(1.755E-02)
7.1 -- 7.2	2.191E-02(1.229E-02)	2.913E-02(1.392E-02)	1.438E-01(1.983E-02)
7.2 -- 7.3	1.251E-02(1.163E-02)	5.990E-02(1.566E-02)	1.441E-01(1.984E-02)
7.3 -- 7.4	5.303E-02(1.426E-02)	1.235E-01(1.876E-02)	1.670E-01(2.079E-02)
7.4 -- 7.5	3.535E-02(1.318E-02)	2.212E-01(2.272E-02)	1.806E-01(2.133E-02)
7.5 -- 7.6	8.978E-02(1.628E-02)	1.433E-01(1.963E-02)	2.010E-02(1.362E-02)
7.6 -- 7.7	3.162E-01(2.540E-02)	2.220E-01(2.275E-02)	1.181E-02(1.310E-02)
7.7 -- 7.8	1.142E-01(1.749E-02)	4.946E-02(1.509E-02)	2.741E-02(1.406E-02)
7.8 -- 7.9	3.075E-01(2.511E-02)	2.519E-02(1.368E-02)	1.852E-02(1.352E-02)
7.9 -- 8.0	7.694E-02(1.560E-02)	3.096E-02(1.403E-02)	7.402E-02(1.661E-02)
8.0 -- 8.1	2.570E-02(1.255E-02)	3.254E-02(1.412E-02)	3.006E-01(2.562E-02)
8.1 -- 8.2	4.710E-02(1.391E-02)	1.827E-02(1.325E-02)	7.140E-01(3.675E-02)
8.2 -- 8.3	4.019E-02(1.348E-02)	1.634E-01(2.047E-02)	2.428E-01(2.365E-02)
8.3 -- 8.4	3.230E-02(1.298E-02)	7.726E-01(3.797E-02)	1.448E-01(1.987E-02)
8.4 -- 8.5	6.270E-02(1.482E-02)	2.649E-01(2.428E-02)	1.733E-01(2.104E-02)
8.5 -- 8.6	6.968E-01(3.584E-02)	8.386E-02(1.690E-02)	1.926E-01(2.180E-02)
8.6 -- 8.7	6.969E-01(3.584E-02)	6.756E-02(1.607E-02)	2.242E-01(2.298E-02)
8.7 -- 8.8	1.053E-01(1.706E-02)	1.241E-01(1.879E-02)	2.866E-01(2.516E-02)
8.8 -- 8.9	5.451E-02(1.435E-02)	1.485E-01(1.985E-02)	5.216E-01(3.205E-02)
8.9 -- 9.0	4.049E-02(1.350E-02)	1.777E-01(2.105E-02)	1.177E+00(4.613E-02)
9.0 -- 9.1	7.211E-02(1.534E-02)	2.123E-01(2.239E-02)	1.727E+01(1.707E-01)
9.1 -- 9.2	1.086E-01(1.722E-02)	3.269E-01(2.634E-02)	3.539E+01(2.441E-01)
9.2 -- 9.3	1.130E-01(1.744E-02)	6.850E-01(3.599E-02)	2.561E+00(6.672E-02)
9.3 -- 9.4	1.273E-01(1.811E-02)	1.170E+01(1.407E-01)	8.664E-02(1.724E-02)
9.4 -- 9.5	1.631E-01(1.970E-02)	3.695E+01(2.494E-01)	8.095E-02(1.696E-02)
9.5 -- 9.6	2.826E-01(2.426E-02)	2.884E+00(7.061E-02)	2.367E-02(1.384E-02)
9.6 -- 9.7	2.747E+00(6.875E-02)	9.173E-02(1.729E-02)	2.559E-02(1.395E-02)
9.7 -- 9.8	4.229E+01(2.667E-01)	4.179E-02(1.466E-02)	1.391E-01(1.963E-02)
9.8 -- 9.9	1.509E+01(1.595E-01)	1.881E-02(1.328E-02)	1.690E-01(2.087E-02)
9.9 -- 10.0	1.254E-01(1.802E-02)	6.444E-03(1.247E-02)	1.478E-01(1.999E-02)
10.0 -- 10.1	4.269E-02(1.364E-02)	6.772E-02(1.608E-02)	9.553E-02(1.767E-02)
10.1 -- 10.2	1.867E-02(1.207E-02)	1.929E-01(2.165E-02)	3.622E-02(1.458E-02)
10.2 -- 10.3	3.042E-02(1.286E-02)	1.656E-01(2.056E-02)	1.011E-02(1.299E-02)
10.3 -- 10.4	3.505E-02(1.316E-02)	1.057E-01(1.795E-02)	1.432E-02(1.326E-02)
10.4 -- 10.5	1.768E-01(2.028E-02)	1.653E-02(1.314E-02)	1.498E-02(1.330E-02)
10.5 -- 10.6	1.262E-01(1.806E-02)	1.853E-02(1.326E-02)	3.480E-02(1.450E-02)
10.6 -- 10.7	1.625E-01(1.968E-02)	1.685E-02(1.316E-02)	4.818E-03(1.264E-02)
10.7 -- 10.8	5.287E-02(1.425E-02)	1.341E-02(1.293E-02)	2.473E-02(1.390E-02)
10.8 -- 10.9	1.843E-02(1.205E-02)	2.149E-02(1.345E-02)	3.320E-02(1.440E-02)
10.9 -- 11.0	1.714E-02(1.196E-02)	1.860E-02(1.327E-02)	9.772E-03(1.297E-02)

<< $^{12}C(p,xp')$ $E_p = 16$ MeV >> *** DDX (error) in [mb/MeV/sr] *** III-3

Ep' (MeV)	80 deg.	90 deg.	100 deg.
11.0 -- 11.1	2.034E-02(1.218E-02)	0.000E+00(0.000E+00)	2.451E-02(1.389E-02)
11.1 -- 11.2	3.859E-02(1.338E-02)	9.823E-03(1.270E-02)	7.933E-02(1.688E-02)
11.2 -- 11.3	1.392E-02(1.173E-02)	6.615E-03(1.249E-02)	1.306E-01(1.926E-02)
11.3 -- 11.4	1.699E-02(1.195E-02)	1.655E-02(1.314E-02)	5.955E-02(1.586E-02)
11.4 -- 11.5	1.859E-02(1.206E-02)	2.501E-02(1.367E-02)	9.837E-03(1.297E-02)
11.5 -- 11.6	8.802E-03(1.136E-02)	7.804E-02(1.661E-02)	1.599E-02(1.336E-02)
11.6 -- 11.7	1.342E-02(1.170E-02)	1.408E-01(1.952E-02)	2.173E-02(1.372E-02)
11.7 -- 11.8	3.691E-03(1.098E-02)	2.934E-02(1.393E-02)	4.334E-02(1.498E-02)
11.8 -- 11.9	1.349E-02(1.170E-02)	8.499E-03(1.261E-02)	4.274E-02(1.495E-02)
11.9 -- 12.0	7.328E-02(1.541E-02)	4.870E-03(1.237E-02)	1.398E-01(1.966E-02)
12.0 -- 12.1	1.362E-01(1.852E-02)	1.501E-02(1.304E-02)	3.446E-01(2.702E-02)
12.1 -- 12.2	4.961E-02(1.406E-02)	2.851E-02(1.388E-02)	3.669E-01(2.771E-02)
12.2 -- 12.3	0.000E+00(0.000E+00)	3.465E-02(1.425E-02)	4.807E-01(3.096E-02)
12.3 -- 12.4	1.201E-02(1.160E-02)	1.816E-01(2.121E-02)	5.931E-01(3.387E-02)
12.4 -- 12.5	0.000E+00(0.000E+00)	2.337E-01(2.318E-02)	6.857E-01(3.610E-02)
12.5 -- 12.6	6.849E-03(1.122E-02)	3.058E-01(2.566E-02)	7.871E-01(3.838E-02)
12.6 -- 12.7	2.166E-02(1.228E-02)	3.295E-01(2.642E-02)	9.774E-01(4.234E-02)
12.7 -- 12.8	9.069E-02(1.633E-02)	3.876E-01(2.821E-02)	1.151E+00(4.566E-02)
12.8 -- 12.9	9.579E-02(1.659E-02)	4.675E-01(3.049E-02)	1.913E+00(5.799E-02)
12.9 -- 13.0	1.125E-01(1.741E-02)	6.373E-01(3.485E-02)	4.076E+00(8.364E-02)
13.0 -- 13.1	1.076E-01(1.718E-02)	8.021E-01(3.862E-02)	5.197E+01(2.956E-01)
13.1 -- 13.2	1.708E-01(2.003E-02)	1.060E+00(4.387E-02)	1.936E+02(5.703E-01)
13.2 -- 13.3	2.016E-01(2.128E-02)	1.699E+00(5.474E-02)	2.896E+01(2.209E-01)
13.3 -- 13.4	2.385E-01(2.269E-02)	5.086E+00(9.319E-02)	1.823E+00(5.667E-02)
13.4 -- 13.5	2.938E-01(2.465E-02)	9.369E+01(3.968E-01)	4.928E-01(3.129E-02)
13.5 -- 13.6	4.353E-01(2.907E-02)	1.624E+02(5.223E-01)	3.291E-01(2.654E-02)
13.6 -- 13.7	7.203E-01(3.638E-02)	7.450E+00(1.125E-01)	1.643E-01(2.068E-02)
13.7 -- 13.8	2.441E+00(6.490E-02)	1.445E+00(5.071E-02)	1.356E+00(4.929E-02)
13.8 -- 13.9	7.428E+01(3.533E-01)	4.822E-01(3.089E-02)	2.062E+00(6.011E-02)
13.9 -- 14.0	1.333E+02(4.732E-01)	3.016E-01(2.552E-02)	1.008E-01(1.791E-02)
14.0 -- 14.1	5.879E+00(9.993E-02)	3.075E+00(7.286E-02)	0.000E+00(0.000E+00)
14.1 -- 14.2	9.969E-01(4.229E-02)	3.633E+00(7.902E-02)	0.000E+00(0.000E+00)
14.2 -- 14.3	3.977E-01(2.796E-02)	1.356E-01(1.930E-02)	0.000E+00(0.000E+00)
14.3 -- 14.4	3.567E+00(7.812E-02)	1.506E-02(1.304E-02)	0.000E+00(0.000E+00)
14.4 -- 14.5	6.672E+00(1.064E-01)	8.254E-03(1.260E-02)	3.811E-02(1.469E-02)
14.5 -- 14.6	1.968E-01(2.109E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
14.6 -- 14.7	1.887E-02(1.208E-02)	4.175E-02(1.466E-02)	0.000E+00(0.000E+00)
14.7 -- 14.8	1.181E-04(1.070E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
14.8 -- 14.9	1.306E-01(1.827E-02)	9.856E-03(1.270E-02)	0.000E+00(0.000E+00)
14.9 -- 15.0	5.781E-02(1.454E-02)	0.000E+00(0.000E+00)	1.290E-02(1.317E-02)
15.0 -- 15.1	3.213E-02(1.297E-02)	0.000E+00(0.000E+00)	2.656E-02(1.401E-02)
15.1 -- 15.2	8.627E-03(1.135E-02)	9.868E-03(1.270E-02)	0.000E+00(0.000E+00)
15.2 -- 15.3	1.678E-02(1.194E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
15.3 -- 15.4	2.212E-03(1.086E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
15.4 -- 15.5	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
15.5 -- 15.6	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
15.6 -- 15.7	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
15.7 -- 15.8	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
15.8 -- 15.9	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
15.9 -- 16.0	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)

<< $^{12}C(p,xp')$ E_p = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** IV-1

Ep' (MeV)	110 deg.	120 deg.	130 deg.
1.0 -- 1.1	7.149E-01(3.776E-02)	6.404E-01(3.529E-02)	7.558E-01(4.152E-02)
1.1 -- 1.2	1.218E+00(4.761E-02)	1.079E+00(4.449E-02)	2.305E+00(7.052E-02)
1.2 -- 1.3	2.204E+00(6.259E-02)	2.183E+00(6.188E-02)	5.205E+00(1.052E-01)
1.3 -- 1.4	2.562E+00(6.719E-02)	4.335E+00(8.625E-02)	3.635E+00(8.809E-02)
1.4 -- 1.5	4.339E+00(8.657E-02)	5.860E+00(9.999E-02)	2.374E+00(7.148E-02)
1.5 -- 1.6	6.447E+00(1.050E-01)	2.892E+00(7.079E-02)	2.291E+00(7.023E-02)
1.6 -- 1.7	3.262E+00(7.535E-02)	2.356E+00(6.409E-02)	2.120E+00(6.761E-02)
1.7 -- 1.8	2.506E+00(6.638E-02)	2.326E+00(6.367E-02)	2.145E+00(6.800E-02)
1.8 -- 1.9	2.357E+00(6.443E-02)	2.297E+00(6.327E-02)	2.323E+00(7.068E-02)
1.9 -- 2.0	2.396E+00(6.491E-02)	2.356E+00(6.402E-02)	2.563E+00(7.413E-02)
2.0 -- 2.1	2.368E+00(6.452E-02)	2.426E+00(6.492E-02)	2.451E+00(7.251E-02)
2.1 -- 2.2	2.402E+00(6.493E-02)	2.727E+00(6.869E-02)	2.032E+00(6.616E-02)
2.2 -- 2.3	2.717E+00(6.886E-02)	2.457E+00(6.528E-02)	1.719E+00(6.098E-02)
2.3 -- 2.4	2.706E+00(6.870E-02)	1.965E+00(5.858E-02)	1.473E+00(5.657E-02)
2.4 -- 2.5	2.101E+00(6.083E-02)	1.526E+00(5.190E-02)	1.555E+00(5.804E-02)
2.5 -- 2.6	1.655E+00(5.431E-02)	1.427E+00(5.025E-02)	1.697E+00(6.056E-02)
2.6 -- 2.7	1.389E+00(4.999E-02)	1.431E+00(5.028E-02)	2.173E+00(6.828E-02)
2.7 -- 2.8	1.350E+00(4.930E-02)	1.585E+00(5.277E-02)	3.268E+00(8.342E-02)
2.8 -- 2.9	1.398E+00(5.008E-02)	2.084E+00(6.016E-02)	4.202E+00(9.443E-02)
2.9 -- 3.0	1.827E+00(5.679E-02)	3.089E+00(7.284E-02)	3.679E+00(8.842E-02)
3.0 -- 3.1	2.753E+00(6.912E-02)	4.175E+00(8.442E-02)	2.245E+00(6.933E-02)
3.1 -- 3.2	3.142E+00(7.367E-02)	2.821E+00(6.965E-02)	1.605E+00(5.884E-02)
3.2 -- 3.3	3.094E+00(7.311E-02)	1.815E+00(5.621E-02)	1.257E+00(5.226E-02)
3.3 -- 3.4	2.156E+00(6.138E-02)	1.506E+00(5.137E-02)	1.035E+00(4.756E-02)
3.4 -- 3.5	1.887E+00(5.756E-02)	1.329E+00(4.837E-02)	9.515E-01(4.567E-02)
3.5 -- 3.6	1.329E+00(4.872E-02)	1.137E+00(4.490E-02)	1.195E+00(5.094E-02)
3.6 -- 3.7	1.212E+00(4.662E-02)	1.135E+00(4.484E-02)	2.493E+00(7.292E-02)
3.7 -- 3.8	1.228E+00(4.689E-02)	1.375E+00(4.911E-02)	3.984E+00(9.189E-02)
3.8 -- 3.9	1.295E+00(4.805E-02)	3.669E+00(7.913E-02)	5.638E+00(1.092E-01)
3.9 -- 4.0	1.967E+00(5.861E-02)	6.719E+00(1.067E-01)	3.273E+00(8.337E-02)
4.0 -- 4.1	6.716E+00(1.068E-01)	6.600E+00(1.057E-01)	7.034E-01(3.948E-02)
4.1 -- 4.2	1.008E+01(1.306E-01)	3.977E+00(8.233E-02)	5.107E-01(3.397E-02)
4.2 -- 4.3	7.242E+00(1.109E-01)	7.855E-01(3.767E-02)	3.213E-01(2.750E-02)
4.3 -- 4.4	3.251E+00(7.477E-02)	4.589E-01(2.950E-02)	2.362E-01(2.404E-02)
4.4 -- 4.5	6.578E-01(3.517E-02)	3.283E-01(2.552E-02)	1.631E-01(2.060E-02)
4.5 -- 4.6	3.747E-01(2.759E-02)	1.880E-01(2.039E-02)	1.704E-01(2.097E-02)
4.6 -- 4.7	2.874E-01(2.479E-02)	1.657E-01(1.944E-02)	2.009E-01(2.247E-02)
4.7 -- 4.8	1.853E-01(2.106E-02)	1.707E-01(1.967E-02)	1.360E-01(1.920E-02)
4.8 -- 4.9	1.488E-01(1.955E-02)	1.205E-01(1.740E-02)	1.064E-01(1.751E-02)
4.9 -- 5.0	1.391E-01(1.914E-02)	1.240E-01(1.756E-02)	8.894E-02(1.643E-02)
5.0 -- 5.1	1.129E-01(1.795E-02)	1.064E-01(1.670E-02)	1.669E-01(2.082E-02)
5.1 -- 5.2	6.315E-02(1.545E-02)	1.213E-01(1.744E-02)	4.644E-01(3.252E-02)
5.2 -- 5.3	1.031E-01(1.749E-02)	4.287E-01(2.864E-02)	1.581E-01(2.037E-02)
5.3 -- 5.4	3.237E-01(2.600E-02)	1.495E-01(1.874E-02)	1.361E-01(1.921E-02)
5.4 -- 5.5	4.199E-01(2.894E-02)	1.610E-01(1.925E-02)	1.352E-01(1.916E-02)
5.5 -- 5.6	7.190E-02(1.592E-02)	1.564E-01(1.905E-02)	1.432E+00(5.557E-02)
5.6 -- 5.7	5.305E-02(1.489E-02)	2.812E-01(2.393E-02)	8.446E-01(4.308E-02)
5.7 -- 5.8	1.655E-01(2.026E-02)	1.047E+00(4.310E-02)	8.072E-02(1.590E-02)
5.8 -- 5.9	1.924E-01(2.135E-02)	2.269E-01(2.194E-02)	1.828E-01(2.161E-02)
5.9 -- 6.0	7.379E-01(3.703E-02)	7.777E-02(1.520E-02)	9.036E-02(1.652E-02)

<< $^{12}C(p,xp')$ E_p = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** IV-2

Ep' (MeV)	110 deg.	120 deg.	130 deg.
6.0 -- 6.1	2.142E-01(2.219E-02)	1.692E-01(1.961E-02)	3.422E-02(1.245E-02)
6.1 -- 6.2	9.538E-02(1.711E-02)	5.638E-02(1.396E-02)	2.657E-02(1.179E-02)
6.2 -- 6.3	1.505E-01(1.963E-02)	4.282E-02(1.312E-02)	4.000E-02(1.293E-02)
6.3 -- 6.4	7.625E-02(1.615E-02)	4.210E-02(1.308E-02)	5.781E-02(1.430E-02)
6.4 -- 6.5	3.882E-02(1.407E-02)	3.503E-02(1.262E-02)	8.118E-02(1.593E-02)
6.5 -- 6.6	1.207E-02(1.237E-02)	4.282E-02(1.312E-02)	6.228E-02(1.463E-02)
6.6 -- 6.7	2.503E-02(1.322E-02)	7.496E-02(1.504E-02)	3.494E-01(2.858E-02)
6.7 -- 6.8	5.779E-02(1.516E-02)	1.403E-01(1.833E-02)	2.605E-01(2.510E-02)
6.8 -- 6.9	7.876E-02(1.628E-02)	3.101E-01(2.492E-02)	2.489E-01(2.461E-02)
6.9 -- 7.0	1.669E-01(2.032E-02)	1.261E-01(1.766E-02)	9.352E-02(1.672E-02)
7.0 -- 7.1	2.041E-01(2.180E-02)	1.529E-01(1.889E-02)	6.318E-02(1.469E-02)
7.1 -- 7.2	1.608E-01(2.007E-02)	4.072E-02(1.299E-02)	6.198E-02(1.461E-02)
7.2 -- 7.3	1.221E-01(1.838E-02)	2.558E-02(1.197E-02)	5.070E-02(1.377E-02)
7.3 -- 7.4	2.201E-02(1.303E-02)	7.205E-02(1.488E-02)	6.924E-02(1.512E-02)
7.4 -- 7.5	5.091E-02(1.477E-02)	7.204E-02(1.488E-02)	1.375E-01(1.928E-02)
7.5 -- 7.6	3.285E-02(1.371E-02)	9.601E-02(1.617E-02)	7.308E-01(4.021E-02)
7.6 -- 7.7	6.425E-02(1.551E-02)	2.960E-01(2.444E-02)	5.466E-01(3.508E-02)
7.7 -- 7.8	1.105E-01(1.784E-02)	7.809E-01(3.757E-02)	1.869E-01(2.181E-02)
7.8 -- 7.9	3.267E-01(2.610E-02)	3.537E-01(2.635E-02)	1.850E-01(2.171E-02)
7.9 -- 8.0	6.877E-01(3.588E-02)	1.994E-01(2.086E-02)	2.058E-01(2.270E-02)
8.0 -- 8.1	3.326E-01(2.629E-02)	2.630E-01(2.328E-02)	2.715E-01(2.556E-02)
8.1 -- 8.2	2.133E-01(2.216E-02)	2.918E-01(2.429E-02)	6.080E-01(3.687E-02)
8.2 -- 8.3	2.448E-01(2.332E-02)	3.562E-01(2.643E-02)	1.473E+01(1.761E-01)
8.3 -- 8.4	2.614E-01(2.391E-02)	7.304E-01(3.642E-02)	7.427E+01(3.949E-01)
8.4 -- 8.5	3.395E-01(2.651E-02)	1.003E+01(1.301E-01)	8.309E+00(1.324E-01)
8.5 -- 8.6	5.918E-01(3.356E-02)	6.116E+01(3.206E-01)	1.094E-01(1.769E-02)
8.6 -- 8.7	1.394E+00(4.973E-02)	1.070E+01(1.344E-01)	8.275E-02(1.603E-02)
8.7 -- 8.8	2.273E+01(1.957E-01)	1.274E-01(1.773E-02)	9.111E-02(1.657E-02)
8.8 -- 8.9	4.154E+01(2.643E-01)	4.115E-02(1.302E-02)	3.835E-02(1.280E-02)
8.9 -- 9.0	2.277E+00(6.289E-02)	4.935E-02(1.354E-02)	2.855E-02(1.197E-02)
9.0 -- 9.1	9.849E-02(1.727E-02)	9.310E-02(1.602E-02)	9.785E-02(1.699E-02)
9.1 -- 9.2	7.897E-02(1.629E-02)	4.218E-02(1.308E-02)	1.280E-01(1.876E-02)
9.2 -- 9.3	3.876E-02(1.407E-02)	8.704E-02(1.570E-02)	1.738E-01(2.117E-02)
9.3 -- 9.4	1.078E-01(1.771E-02)	1.151E-01(1.714E-02)	1.597E-02(1.081E-02)
9.4 -- 9.5	1.532E-01(1.975E-02)	1.823E-01(2.016E-02)	1.516E-02(1.073E-02)
9.5 -- 9.6	9.267E-02(1.698E-02)	2.711E-02(1.208E-02)	6.787E-03(9.876E-03)
9.6 -- 9.7	1.262E-01(1.857E-02)	1.242E-02(1.101E-02)	9.447E-03(1.016E-02)
9.7 -- 9.8	1.441E-01(1.936E-02)	5.970E-03(1.051E-02)	7.890E-02(1.578E-02)
9.8 -- 9.9	2.825E-02(1.342E-02)	1.402E-02(1.113E-02)	1.419E-02(1.063E-02)
9.9 -- 10.0	1.869E-02(1.281E-02)	5.432E-02(1.384E-02)	8.357E-03(1.004E-02)
10.0 -- 10.1	2.708E-02(1.335E-02)	2.780E-02(1.213E-02)	6.834E-03(9.881E-03)
10.1 -- 10.2	2.347E-02(1.312E-02)	1.957E-02(1.154E-02)	5.015E-03(9.686E-03)
10.2 -- 10.3	3.916E-02(1.409E-02)	5.553E-03(1.047E-02)	3.850E-02(1.281E-02)
10.3 -- 10.4	3.104E-02(1.360E-02)	1.301E-02(1.105E-02)	5.352E-02(1.399E-02)
10.4 -- 10.5	1.348E-02(1.247E-02)	6.847E-02(1.467E-02)	2.716E-02(1.185E-02)
10.5 -- 10.6	1.187E-02(1.236E-02)	8.161E-02(1.541E-02)	9.647E-03(1.018E-02)
10.6 -- 10.7	1.507E-02(1.257E-02)	5.377E-02(1.381E-02)	1.595E-02(1.081E-02)
10.7 -- 10.8	3.307E-02(1.372E-02)	1.604E-02(1.128E-02)	2.719E-02(1.185E-02)
10.8 -- 10.9	1.471E-01(1.949E-02)	9.165E-03(1.076E-02)	1.247E-02(1.046E-02)
10.9 -- 11.0	1.064E-01(1.765E-02)	2.603E-02(1.200E-02)	1.102E-02(1.032E-02)

<< $^{12}C(p,xp')$ E_p = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** IV-3

Ep' (MeV)	110 deg.	120 deg.	130 deg.
11.0 -- 11.1	3.918E-02(1.409E-02)	1.275E-02(1.103E-02)	1.242E-02(1.046E-02)
11.1 -- 11.2	1.186E-02(1.236E-02)	1.588E-02(1.127E-02)	4.743E-02(1.352E-02)
11.2 -- 11.3	1.470E-02(1.255E-02)	2.421E-02(1.187E-02)	3.822E-02(1.279E-02)
11.3 -- 11.4	2.625E-02(1.330E-02)	8.568E-02(1.563E-02)	4.574E-02(1.339E-02)
11.4 -- 11.5	3.237E-02(1.368E-02)	1.364E-01(1.815E-02)	8.243E-02(1.601E-02)
11.5 -- 11.6	6.467E-02(1.554E-02)	1.803E-01(2.008E-02)	1.257E-01(1.863E-02)
11.6 -- 11.7	1.836E-01(2.100E-02)	2.538E-01(2.295E-02)	1.525E-01(2.009E-02)
11.7 -- 11.8	3.158E-01(2.575E-02)	2.759E-01(2.374E-02)	1.873E-01(2.183E-02)
11.8 -- 11.9	3.810E-01(2.779E-02)	3.695E-01(2.685E-02)	2.615E-01(2.514E-02)
11.9 -- 12.0	4.449E-01(2.966E-02)	4.446E-01(2.910E-02)	4.439E-01(3.186E-02)
12.0 -- 12.1	5.744E-01(3.312E-02)	6.650E-01(3.488E-02)	3.293E+00(8.363E-02)
12.1 -- 12.2	6.686E-01(3.543E-02)	8.234E-01(3.851E-02)	7.061E+01(3.851E-01)
12.2 -- 12.3	8.293E-01(3.905E-02)	1.710E+00(5.451E-02)	5.206E+01(3.307E-01)
12.3 -- 12.4	9.994E-01(4.255E-02)	2.378E+01(2.000E-01)	6.872E-01(3.906E-02)
12.4 -- 12.5	1.479E+00(5.115E-02)	1.384E+02(4.821E-01)	5.456E-01(3.505E-02)
12.5 -- 12.6	2.556E+00(6.651E-02)	2.350E+01(1.989E-01)	1.218E-01(1.841E-02)
12.6 -- 12.7	1.629E+01(1.658E-01)	7.201E-01(3.619E-02)	9.718E-02(1.695E-02)
12.7 -- 12.8	1.541E+02(5.088E-01)	5.173E-01(3.113E-02)	3.347E-02(1.239E-02)
12.8 -- 12.9	7.128E+01(3.461E-01)	1.212E-01(1.743E-02)	1.696E-02(1.090E-02)
12.9 -- 13.0	1.610E+00(5.326E-02)	1.162E-01(1.719E-02)	1.139E-01(1.796E-02)
13.0 -- 13.1	1.007E+00(4.271E-02)	2.783E-02(1.213E-02)	1.126E+00(4.945E-02)
13.1 -- 13.2	2.522E-01(2.358E-02)	6.422E-02(1.443E-02)	3.084E-01(2.703E-02)
13.2 -- 13.3	2.023E-01(2.173E-02)	5.582E-01(3.221E-02)	0.000E+00(0.000E+00)
13.3 -- 13.4	6.382E-02(1.549E-02)	1.696E-01(1.962E-02)	0.000E+00(0.000E+00)
13.4 -- 13.5	3.653E-01(2.732E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
13.5 -- 13.6	8.874E-01(4.028E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
13.6 -- 13.7	4.559E-02(1.447E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
13.7 -- 13.8	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
13.8 -- 13.9	3.265E-03(1.176E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
13.9 -- 14.0	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	1.979E-02(1.117E-02)
14.0 -- 14.1	0.000E+00(0.000E+00)	1.740E-02(1.138E-02)	0.000E+00(0.000E+00)
14.1 -- 14.2	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
14.2 -- 14.3	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	2.957E-02(1.206E-02)
14.3 -- 14.4	0.000E+00(0.000E+00)	5.752E-03(1.049E-02)	0.000E+00(0.000E+00)
14.4 -- 14.5	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
14.5 -- 14.6	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	2.015E-04(9.152E-03)
14.6 -- 14.7	0.000E+00(0.000E+00)	1.064E-02(1.087E-02)	1.177E-02(1.039E-02)
14.7 -- 14.8	0.000E+00(0.000E+00)	1.791E-02(1.142E-02)	5.478E-03(9.738E-03)
14.8 -- 14.9	2.499E-02(1.322E-02)	1.756E-02(1.139E-02)	0.000E+00(0.000E+00)
14.9 -- 15.0	1.033E-02(1.225E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
15.0 -- 15.1	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
15.1 -- 15.2	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
15.2 -- 15.3	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
15.3 -- 15.4	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
15.4 -- 15.5	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
15.5 -- 15.6	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
15.6 -- 15.7	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
15.7 -- 15.8	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
15.8 -- 15.9	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
15.9 -- 16.0	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)

<< $^{12}C(p,xp')$ E_p = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** V-1

Ep' (MeV)	140 deg.	150 deg.	155 deg.
1.0 -- 1.1	1.177E+00(4.528E-02)	1.638E+00(5.307E-02)	1.782E+00(5.532E-02)
1.1 -- 1.2	3.344E+00(7.541E-02)	3.429E+00(7.631E-02)	2.874E+00(6.995E-02)
1.2 -- 1.3	4.190E+00(8.429E-02)	2.801E+00(6.905E-02)	2.567E+00(6.615E-02)
1.3 -- 1.4	2.513E+00(6.549E-02)	2.561E+00(6.606E-02)	2.494E+00(6.521E-02)
1.4 -- 1.5	2.560E+00(6.608E-02)	2.587E+00(6.638E-02)	2.626E+00(6.688E-02)
1.5 -- 1.6	2.289E+00(6.253E-02)	2.594E+00(6.646E-02)	2.425E+00(6.430E-02)
1.6 -- 1.7	2.328E+00(6.304E-02)	2.444E+00(6.452E-02)	2.505E+00(6.532E-02)
1.7 -- 1.8	2.376E+00(6.367E-02)	2.553E+00(6.592E-02)	2.679E+00(6.751E-02)
1.8 -- 1.9	2.520E+00(6.553E-02)	2.599E+00(6.649E-02)	2.577E+00(6.623E-02)
1.9 -- 2.0	2.391E+00(6.385E-02)	2.453E+00(6.461E-02)	2.457E+00(6.468E-02)
2.0 -- 2.1	2.140E+00(6.045E-02)	2.232E+00(6.167E-02)	2.350E+00(6.327E-02)
2.1 -- 2.2	1.873E+00(5.662E-02)	2.298E+00(6.255E-02)	2.547E+00(6.582E-02)
2.2 -- 2.3	1.749E+00(5.473E-02)	2.504E+00(6.525E-02)	2.781E+00(6.874E-02)
2.3 -- 2.4	1.835E+00(5.602E-02)	2.677E+00(6.743E-02)	3.247E+00(7.420E-02)
2.4 -- 2.5	2.177E+00(6.092E-02)	3.133E+00(7.288E-02)	3.767E+00(7.986E-02)
2.5 -- 2.6	2.701E+00(6.776E-02)	4.372E+00(8.597E-02)	5.393E+00(9.543E-02)
2.6 -- 2.7	3.554E+00(7.760E-02)	5.942E+00(1.001E-01)	6.487E+00(1.046E-01)
2.7 -- 2.8	4.717E+00(8.929E-02)	5.362E+00(9.514E-02)	4.794E+00(9.000E-02)
2.8 -- 2.9	4.149E+00(8.378E-02)	3.117E+00(7.268E-02)	2.810E+00(6.905E-02)
2.9 -- 3.0	2.636E+00(6.692E-02)	2.055E+00(5.914E-02)	1.991E+00(5.823E-02)
3.0 -- 3.1	2.074E+00(5.944E-02)	1.901E+00(5.691E-02)	1.644E+00(5.298E-02)
3.1 -- 3.2	1.457E+00(4.997E-02)	1.231E+00(4.596E-02)	1.116E+00(4.382E-02)
3.2 -- 3.3	1.069E+00(4.294E-02)	1.066E+00(4.283E-02)	9.233E-01(3.995E-02)
3.3 -- 3.4	9.647E-01(4.084E-02)	9.908E-01(4.132E-02)	1.120E+00(4.389E-02)
3.4 -- 3.5	1.000E+00(4.155E-02)	1.440E+00(4.961E-02)	1.506E+00(5.072E-02)
3.5 -- 3.6	1.625E+00(5.268E-02)	2.113E+00(5.992E-02)	2.729E+00(6.802E-02)
3.6 -- 3.7	2.564E+00(6.596E-02)	4.173E+00(8.395E-02)	3.214E+00(7.375E-02)
3.7 -- 3.8	4.862E+00(9.060E-02)	1.584E+00(5.197E-02)	7.759E-01(3.667E-02)
3.8 -- 3.9	2.229E+00(6.154E-02)	5.911E-01(3.214E-02)	5.453E-01(3.093E-02)
3.9 -- 4.0	5.517E-01(3.115E-02)	5.032E-01(2.975E-02)	4.295E-01(2.761E-02)
4.0 -- 4.1	4.578E-01(2.851E-02)	4.772E-01(2.901E-02)	4.563E-01(2.841E-02)
4.1 -- 4.2	3.060E-01(2.361E-02)	3.557E-01(2.524E-02)	2.347E-01(2.086E-02)
4.2 -- 4.3	2.981E-01(2.333E-02)	1.669E-01(1.790E-02)	1.818E-01(1.861E-02)
4.3 -- 4.4	2.017E-01(1.956E-02)	1.821E-01(1.860E-02)	1.262E-01(1.591E-02)
4.4 -- 4.5	1.599E-01(1.769E-02)	1.377E-01(1.647E-02)	1.084E-01(1.495E-02)
4.5 -- 4.6	1.609E-01(1.774E-02)	1.030E-01(1.461E-02)	1.168E-01(1.542E-02)
4.6 -- 4.7	1.201E-01(1.569E-02)	1.144E-01(1.526E-02)	1.273E-01(1.598E-02)
4.7 -- 4.8	8.884E-02(1.392E-02)	1.204E-01(1.559E-02)	2.100E-01(1.986E-02)
4.8 -- 4.9	7.094E-02(1.279E-02)	4.136E-01(2.711E-02)	4.596E-01(2.852E-02)
4.9 -- 5.0	3.299E-01(2.446E-02)	2.374E-01(2.096E-02)	1.147E-01(1.530E-02)
5.0 -- 5.1	3.460E-01(2.501E-02)	9.349E-02(1.406E-02)	1.661E-01(1.790E-02)
5.1 -- 5.2	8.067E-02(1.342E-02)	5.026E-01(2.974E-02)	2.353E+00(6.319E-02)
5.2 -- 5.3	1.157E-01(1.545E-02)	3.425E+00(7.610E-02)	2.797E+00(6.883E-02)
5.3 -- 5.4	1.838E+00(5.595E-02)	7.330E-01(3.566E-02)	1.575E-01(1.749E-02)
5.4 -- 5.5	1.357E+00(4.820E-02)	1.159E-01(1.534E-02)	1.604E-01(1.763E-02)
5.5 -- 5.6	1.139E-01(1.535E-02)	2.388E-01(2.102E-02)	1.766E-01(1.839E-02)
5.6 -- 5.7	1.729E-01(1.830E-02)	1.072E-01(1.485E-02)	5.552E-02(1.161E-02)
5.7 -- 5.8	1.252E-01(1.596E-02)	4.389E-02(1.070E-02)	5.334E-02(1.145E-02)
5.8 -- 5.9	3.545E-02(1.020E-02)	4.044E-02(1.042E-02)	3.011E-02(9.599E-03)
5.9 -- 6.0	3.895E-02(1.048E-02)	4.223E-02(1.057E-02)	5.815E-02(1.180E-02)

<< $^{12}C(p,xp')$ E_p = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** V-2

Ep' (MeV)	140 deg.	150 deg.	155 deg.
6.0 -- 6.1	4.411E-02(1.089E-02)	5.854E-02(1.179E-02)	8.681E-02(1.369E-02)
6.1 -- 6.2	6.135E-02(1.215E-02)	7.340E-02(1.280E-02)	6.910E-02(1.255E-02)
6.2 -- 6.3	8.965E-02(1.397E-02)	5.702E-02(1.168E-02)	8.575E-02(1.362E-02)
6.3 -- 6.4	6.313E-02(1.227E-02)	3.012E-01(2.338E-02)	4.693E-01(2.880E-02)
6.4 -- 6.5	1.791E-01(1.858E-02)	4.260E-01(2.749E-02)	2.225E-01(2.037E-02)
6.5 -- 6.6	4.085E-01(2.703E-02)	2.259E-01(2.049E-02)	2.181E-01(2.019E-02)
6.6 -- 6.7	1.625E-01(1.782E-02)	1.165E-01(1.538E-02)	6.723E-02(1.243E-02)
6.7 -- 6.8	1.691E-01(1.813E-02)	5.922E-02(1.184E-02)	4.561E-02(1.087E-02)
6.8 -- 6.9	6.316E-02(1.227E-02)	5.000E-02(1.117E-02)	5.814E-02(1.180E-02)
6.9 -- 7.0	4.218E-02(1.074E-02)	7.432E-02(1.286E-02)	1.119E-01(1.515E-02)
7.0 -- 7.1	6.142E-02(1.215E-02)	1.088E-01(1.494E-02)	1.293E-01(1.608E-02)
7.1 -- 7.2	8.083E-02(1.343E-02)	1.610E-01(1.764E-02)	4.922E-01(2.946E-02)
7.2 -- 7.3	1.014E-01(1.465E-02)	1.025E+00(4.197E-02)	1.305E+00(4.725E-02)
7.3 -- 7.4	6.325E-01(3.326E-02)	7.009E-01(3.489E-02)	4.280E-01(2.757E-02)
7.4 -- 7.5	7.562E-01(3.625E-02)	2.590E-01(2.181E-02)	2.911E-01(2.303E-02)
7.5 -- 7.6	2.277E-01(2.066E-02)	3.142E-01(2.384E-02)	3.985E-01(2.666E-02)
7.6 -- 7.7	1.876E-01(1.896E-02)	3.947E-01(2.652E-02)	6.168E-01(3.282E-02)
7.7 -- 7.8	2.392E-01(2.112E-02)	7.913E-01(3.700E-02)	3.488E+00(7.679E-02)
7.8 -- 7.9	3.271E-01(2.437E-02)	1.367E+01(1.516E-01)	7.596E+01(3.572E-01)
7.9 -- 8.0	1.080E+00(4.310E-02)	9.433E+01(3.980E-01)	4.573E+01(2.772E-01)
8.0 -- 8.1	3.425E+01(2.399E-01)	1.450E+01(1.562E-01)	5.921E-01(3.218E-02)
8.1 -- 8.2	6.958E+01(3.419E-01)	2.102E-01(1.984E-02)	2.164E-01(2.012E-02)
8.2 -- 8.3	2.656E+00(6.711E-02)	1.601E-01(1.759E-02)	9.605E-02(1.424E-02)
8.3 -- 8.4	1.109E-01(1.519E-02)	7.705E-02(1.304E-02)	8.137E-02(1.335E-02)
8.4 -- 8.5	8.028E-02(1.339E-02)	4.206E-02(1.055E-02)	3.158E-02(9.727E-03)
8.5 -- 8.6	5.299E-02(1.155E-02)	4.019E-02(1.040E-02)	5.980E-02(1.192E-02)
8.6 -- 8.7	1.844E-02(8.689E-03)	1.031E-01(1.462E-02)	1.079E-01(1.493E-02)
8.7 -- 8.8	5.199E-02(1.148E-02)	1.247E-01(1.582E-02)	2.560E-01(2.171E-02)
8.8 -- 8.9	1.117E-01(1.523E-02)	2.309E-01(2.070E-02)	1.022E-01(1.460E-02)
8.9 -- 9.0	1.407E-01(1.676E-02)	3.148E-02(9.673E-03)	9.486E-03(7.584E-03)
9.0 -- 9.1	1.293E-01(1.618E-02)	2.016E-02(8.635E-03)	1.349E-02(8.015E-03)
9.1 -- 9.2	5.284E-03(7.308E-03)	1.850E-02(8.472E-03)	1.320E-02(7.985E-03)
9.2 -- 9.3	8.642E-03(7.684E-03)	1.408E-02(8.022E-03)	9.330E-02(1.408E-02)
9.3 -- 9.4	8.272E-03(7.644E-03)	7.213E-02(1.272E-02)	5.534E-02(1.160E-02)
9.4 -- 9.5	4.014E-02(1.058E-02)	1.795E-02(8.418E-03)	1.855E-02(8.528E-03)
9.5 -- 9.6	5.267E-02(1.153E-02)	1.879E-02(8.501E-03)	7.182E-03(7.324E-03)
9.6 -- 9.7	1.534E-02(8.384E-03)	4.713E-03(6.973E-03)	2.337E-02(8.991E-03)
9.7 -- 9.8	1.366E-02(8.215E-03)	3.556E-02(1.002E-02)	3.949E-02(1.039E-02)
9.8 -- 9.9	1.826E-02(8.671E-03)	6.028E-02(1.191E-02)	2.823E-02(9.433E-03)
9.9 -- 10.0	2.708E-02(9.487E-03)	2.575E-02(9.162E-03)	5.855E-03(7.171E-03)
10.0 -- 10.1	4.495E-02(1.095E-02)	1.251E-02(7.856E-03)	8.757E-03(7.503E-03)
10.1 -- 10.2	1.296E-02(8.142E-03)	5.805E-03(7.104E-03)	3.884E-03(6.936E-03)
10.2 -- 10.3	3.613E-03(7.114E-03)	5.397E-03(7.055E-03)	9.688E-03(7.606E-03)
10.3 -- 10.4	1.091E-02(7.928E-03)	2.201E-02(8.813E-03)	1.052E-02(7.697E-03)
10.4 -- 10.5	0.000E+00(0.000E+00)	1.475E-02(8.092E-03)	5.043E-03(7.075E-03)
10.5 -- 10.6	0.000E+00(0.000E+00)	1.313E-02(7.922E-03)	7.822E-03(7.397E-03)
10.6 -- 10.7	6.970E-03(7.499E-03)	8.651E-03(7.432E-03)	4.139E-02(1.054E-02)
10.7 -- 10.8	1.028E-02(7.862E-03)	2.707E-02(9.283E-03)	3.408E-02(9.941E-03)
10.8 -- 10.9	1.262E-02(8.107E-03)	4.272E-02(1.060E-02)	5.317E-02(1.144E-02)
10.9 -- 11.0	3.261E-02(9.965E-03)	3.498E-02(9.972E-03)	9.481E-02(1.417E-02)

<< $^{12}C(p,xp')$ E_p = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** V-3

Ep' (MeV)	140 deg.	150 deg.	155 deg.
11.0 -- 11.1	4.440E-02(1.091E-02)	9.613E-02(1.422E-02)	1.175E-01(1.545E-02)
11.1 -- 11.2	6.637E-02(1.249E-02)	1.164E-01(1.536E-02)	1.580E-01(1.752E-02)
11.2 -- 11.3	9.751E-02(1.443E-02)	1.371E-01(1.646E-02)	1.758E-01(1.835E-02)
11.3 -- 11.4	1.245E-01(1.593E-02)	1.735E-01(1.822E-02)	2.242E-01(2.045E-02)
11.4 -- 11.5	8.995E-02(1.398E-02)	2.805E-01(2.262E-02)	5.464E-01(3.097E-02)
11.5 -- 11.6	1.544E-01(1.743E-02)	7.875E-01(3.692E-02)	1.263E+01(1.458E-01)
11.6 -- 11.7	2.453E-01(2.136E-02)	2.304E+01(1.968E-01)	6.030E+01(3.182E-01)
11.7 -- 11.8	7.386E-01(3.584E-02)	5.160E+01(2.944E-01)	5.678E+00(9.785E-02)
11.8 -- 11.9	2.260E+01(1.949E-01)	2.105E+00(5.979E-02)	2.671E-01(2.214E-02)
11.9 -- 12.0	5.861E+01(3.138E-01)	3.474E-01(2.498E-02)	6.021E-01(3.244E-02)
12.0 -- 12.1	2.782E+00(6.867E-02)	4.368E-01(2.782E-02)	8.316E-02(1.346E-02)
12.1 -- 12.2	3.031E-01(2.352E-02)	4.427E-02(1.073E-02)	1.989E-01(1.938E-02)
12.2 -- 12.3	3.406E-01(2.483E-02)	1.768E-01(1.837E-02)	1.142E-01(1.528E-02)
12.3 -- 12.4	4.227E-02(1.075E-02)	6.236E-02(1.206E-02)	3.424E-02(9.954E-03)
12.4 -- 12.5	1.315E-01(1.629E-02)	9.367E-03(7.513E-03)	3.346E-02(9.888E-03)
12.5 -- 12.6	4.260E-02(1.077E-02)	1.056E-01(1.477E-02)	1.064E+00(4.276E-02)
12.6 -- 12.7	1.702E-02(8.551E-03)	2.120E+00(6.001E-02)	2.164E+00(6.063E-02)
12.7 -- 12.8	3.235E-01(2.424E-02)	1.154E+00(4.449E-02)	6.069E-02(1.198E-02)
12.8 -- 12.9	2.056E+00(5.913E-02)	9.839E-03(7.566E-03)	0.000E+00(0.000E+00)
12.9 -- 13.0	2.929E-01(2.316E-02)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
13.0 -- 13.1	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
13.1 -- 13.2	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	1.286E-02(7.949E-03)
13.2 -- 13.3	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
13.3 -- 13.4	1.632E-02(8.482E-03)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
13.4 -- 13.5	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
13.5 -- 13.6	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	1.726E-02(8.401E-03)
13.6 -- 13.7	0.000E+00(0.000E+00)	1.951E-02(8.572E-03)	2.460E-02(9.105E-03)
13.7 -- 13.8	2.679E-02(9.462E-03)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
13.8 -- 13.9	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
13.9 -- 14.0	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	9.516E-03(7.588E-03)
14.0 -- 14.1	6.492E-03(7.446E-03)	1.831E-02(8.453E-03)	0.000E+00(0.000E+00)
14.1 -- 14.2	8.819E-03(7.704E-03)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
14.2 -- 14.3	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
14.3 -- 14.4	0.000E+00(0.000E+00)	7.260E-03(7.274E-03)	2.155E-02(8.819E-03)
14.4 -- 14.5	7.987E-04(6.774E-03)	1.116E-02(7.712E-03)	9.780E-03(7.617E-03)
14.5 -- 14.6	1.341E-02(8.189E-03)	4.464E-03(6.944E-03)	8.086E-03(7.428E-03)
14.6 -- 14.7	2.183E-03(6.944E-03)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
14.7 -- 14.8	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
14.8 -- 14.9	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)
14.9 -- 15.0	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)	0.000E+00(0.000E+00)

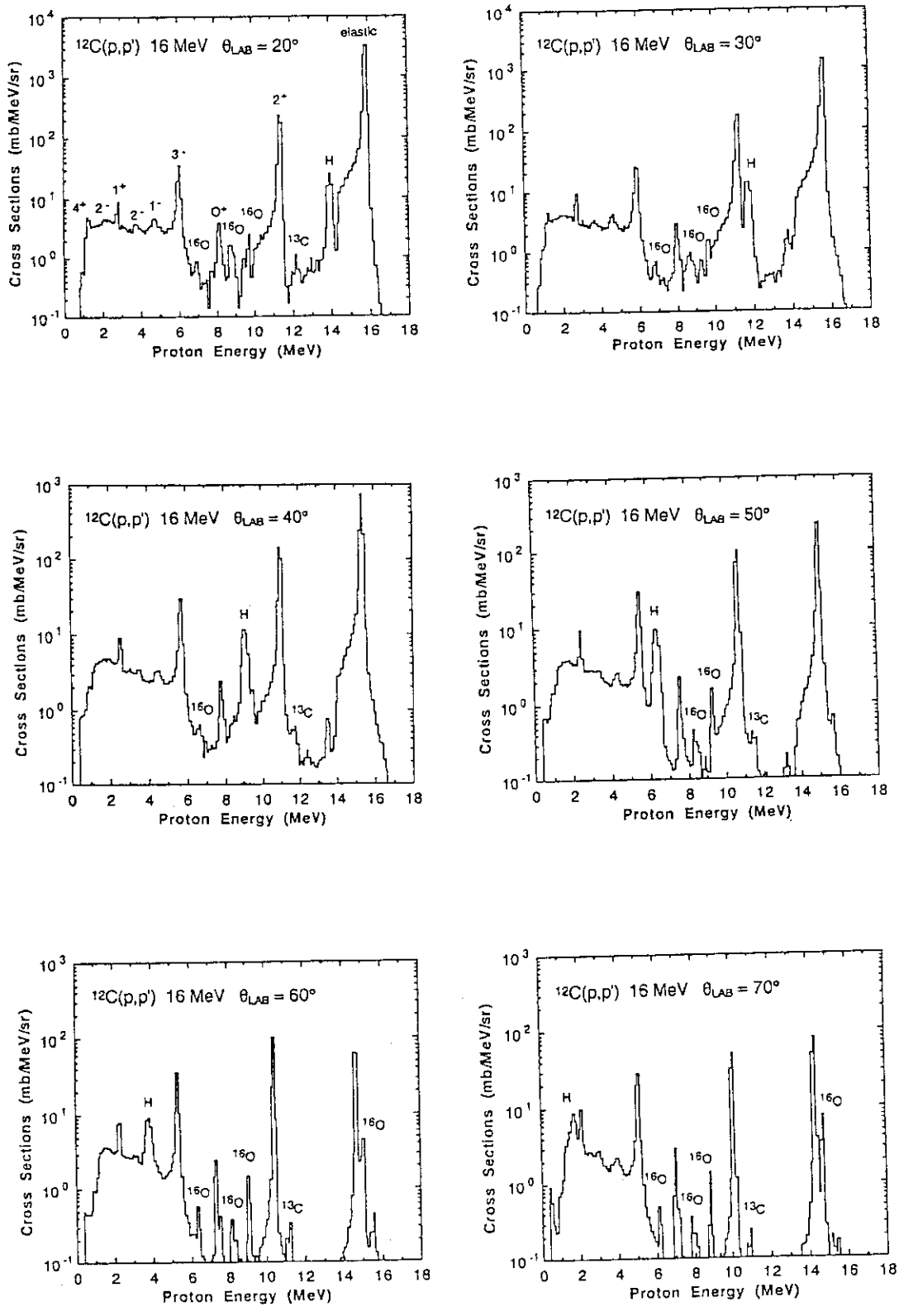

Fig. A-2. Differential cross sections of the $^{12}C(p,px)$ reaction at 16 MeV.

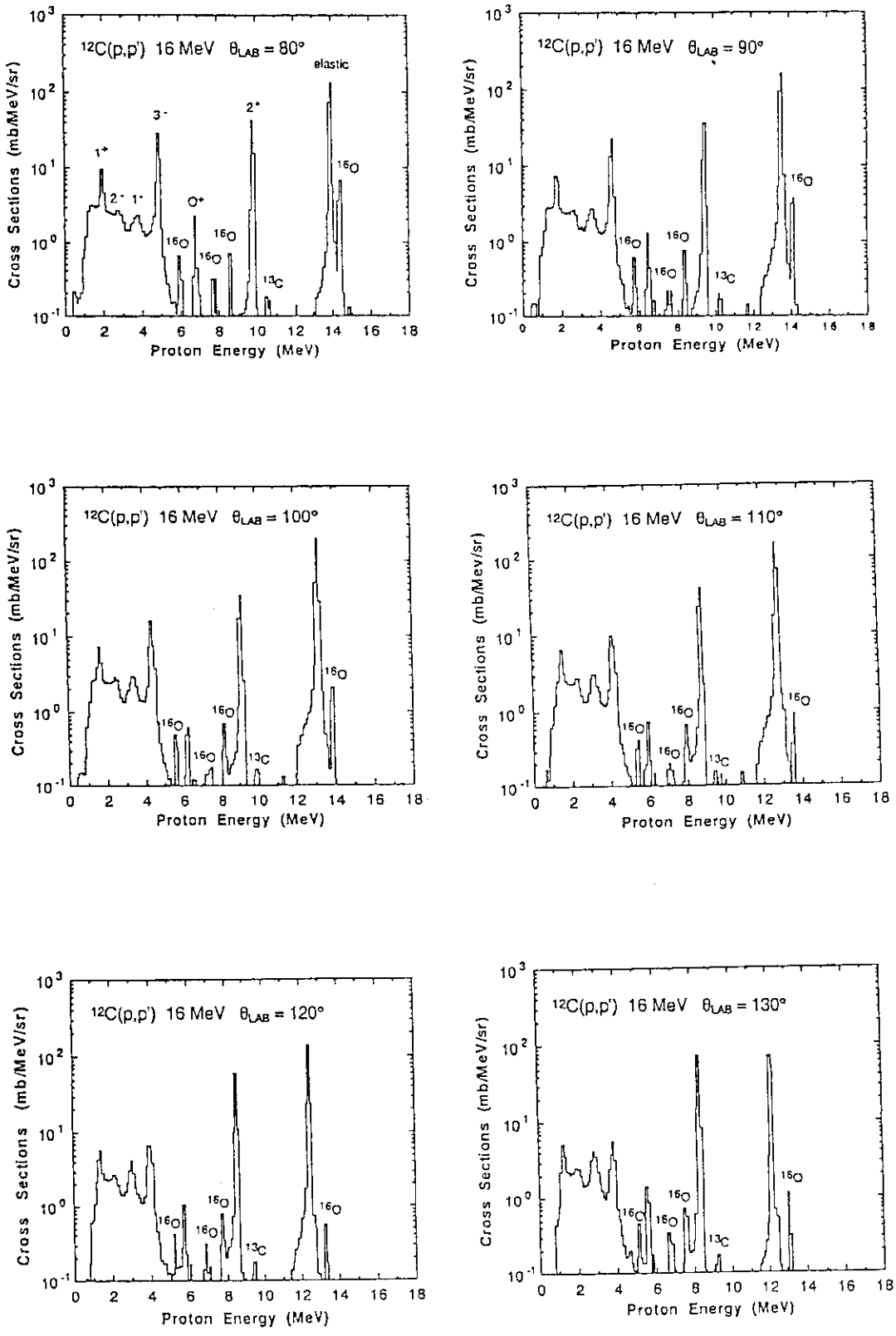

Fig. A-2. Continued.

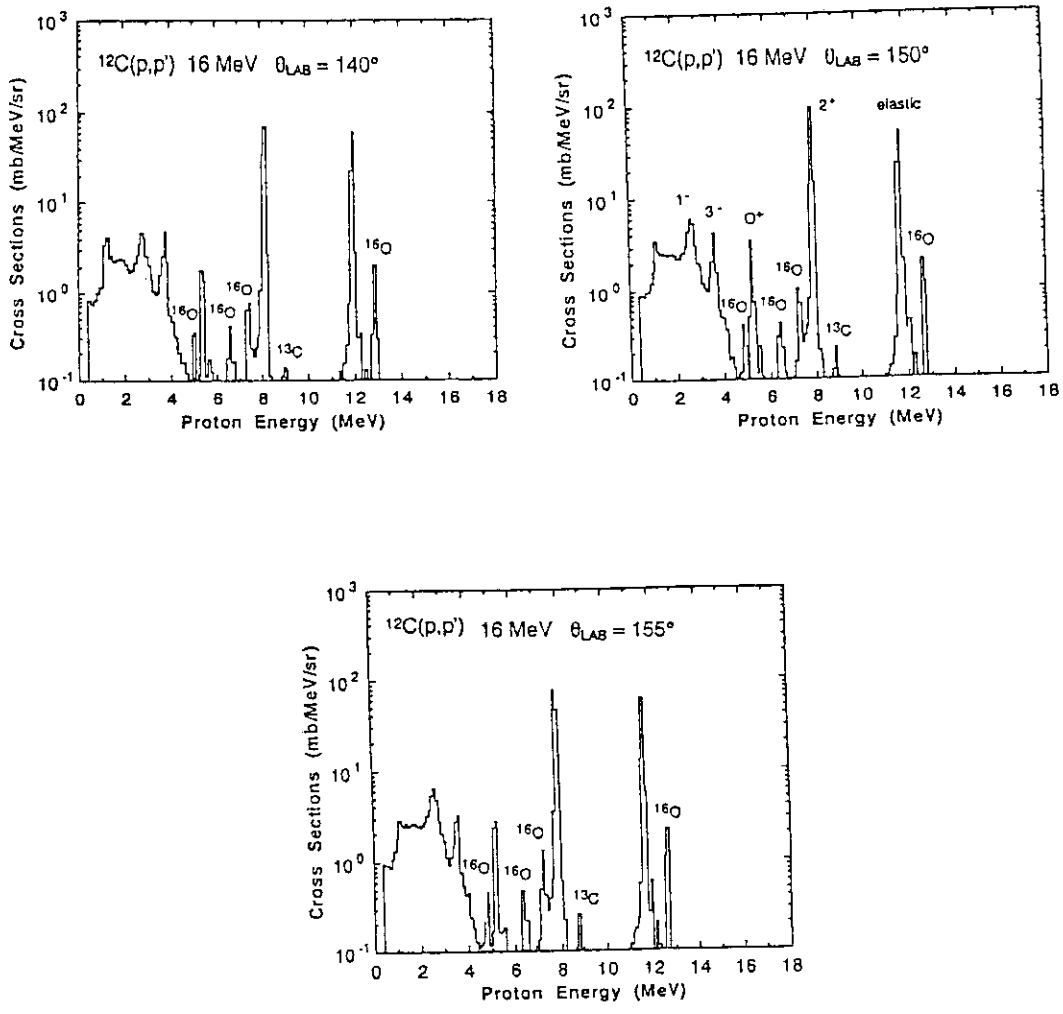

Fig. A-2. Continued.

Appendix 3 Double differential cross sections of the $^{12}C(p,\alpha x)$ reaction at 16 MeV.
******* indicate data are not available.

<< $^{12}C(p,\alpha)$ Ep = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** I-1

Eα (MeV)	20 deg.	30 deg.	40 deg.
1.0 -- 1.1	******** (********)	******** (********)	******** (********)
1.1 -- 1.2	******** (********)	******** (********)	******** (********)
1.2 -- 1.3	******** (********)	******** (********)	******** (********)
1.3 -- 1.4	******** (********)	******** (********)	******** (********)
1.4 -- 1.5	******** (********)	******** (********)	******** (********)
1.5 -- 1.6	******** (********)	******** (********)	******** (********)
1.6 -- 1.7	******** (********)	******** (********)	******** (********)
1.7 -- 1.8	******** (********)	******** (********)	******** (********)
1.8 -- 1.9	******** (********)	******** (********)	******** (********)
1.9 -- 2.0	******** (********)	******** (********)	******** (********)
2.0 -- 2.1	******** (********)	******** (********)	******** (********)
2.1 -- 2.2	******** (********)	******** (********)	******** (********)
2.2 -- 2.3	******** (********)	******** (********)	******** (********)
2.3 -- 2.4	******** (********)	******** (********)	******** (********)
2.4 -- 2.5	******** (********)	******** (********)	******** (********)
2.5 -- 2.6	******** (********)	******** (********)	******** (********)
2.6 -- 2.7	******** (********)	******** (********)	******** (********)
2.7 -- 2.8	******** (********)	******** (********)	******** (********)
2.8 -- 2.9	******** (********)	******** (********)	1.668E+01(5.509E-01)
2.9 -- 3.0	******** (********)	******** (********)	1.571E+01(5.346E-01)
3.0 -- 3.1	******** (********)	******** (********)	1.397E+01(5.055E-01)
3.1 -- 3.2	******** (********)	******** (********)	1.384E+01(5.028E-01)
3.2 -- 3.3	******** (********)	******** (********)	1.346E+01(4.963E-01)
3.3 -- 3.4	******** (********)	******** (********)	1.269E+01(4.814E-01)
3.4 -- 3.5	******** (********)	******** (********)	1.237E+01(4.749E-01)
3.5 -- 3.6	******** (********)	1.505E+01(5.207E-01)	1.278E+01(4.843E-01)
3.6 -- 3.7	******** (********)	1.407E+01(5.031E-01)	1.201E+01(4.690E-01)
3.7 -- 3.8	******** (********)	1.391E+01(4.996E-01)	1.207E+01(4.699E-01)
3.8 -- 3.9	******** (********)	1.396E+01(4.999E-01)	1.047E+01(4.389E-01)
3.9 -- 4.0	******** (********)	1.412E+01(5.054E-01)	1.124E+01(4.536E-01)
4.0 -- 4.1	******** (********)	******** (********)	******** (********)
4.1 -- 4.2	******** (********)	******** (********)	******** (********)
4.2 -- 4.3	******** (********)	******** (********)	******** (********)
4.3 -- 4.4	******** (********)	******** (********)	******** (********)
4.4 -- 4.5	******** (********)	******** (********)	******** (********)
4.5 -- 4.6	1.144E+01(1.584E-01)	8.566E+00(1.418E-01)	6.198E+00(1.198E-01)
4.6 -- 4.7	1.055E+01(1.521E-01)	8.151E+00(1.383E-01)	5.866E+00(1.166E-01)
4.7 -- 4.8	9.712E+00(1.456E-01)	7.567E+00(1.331E-01)	5.394E+00(1.116E-01)
4.8 -- 4.9	8.297E+00(1.346E-01)	7.273E+00(1.305E-01)	5.051E+00(1.084E-01)
4.9 -- 5.0	6.452E+00(1.187E-01)	6.691E+00(1.252E-01)	5.208E+00(1.101E-01)
5.0 -- 5.1	4.465E+00(9.876E-02)	6.226E+00(1.205E-01)	9.182E+00(1.481E-01)
5.1 -- 5.2	3.363E+00(8.567E-02)	5.761E+00(1.159E-01)	1.069E+01(1.607E-01)
5.2 -- 5.3	3.365E+00(8.569E-02)	5.685E+00(1.154E-01)	4.258E+00(1.003E-01)
5.3 -- 5.4	3.531E+00(8.761E-02)	6.981E+00(1.284E-01)	2.288E+00(7.268E-02)
5.4 -- 5.5	4.428E+00(9.818E-02)	1.238E+01(1.729E-01)	2.008E+00(6.803E-02)
5.5 -- 5.6	5.592E+00(1.106E-01)	9.342E+00(1.499E-01)	1.921E+00(6.699E-02)
5.6 -- 5.7	6.594E+00(1.203E-01)	4.316E+00(1.007E-01)	1.866E+00(6.625E-02)
5.7 -- 5.8	1.101E+01(1.560E-01)	3.220E+00(8.700E-02)	1.818E+00(6.574E-02)
5.8 -- 5.9	1.234E+01(1.656E-01)	2.611E+00(7.809E-02)	1.705E+00(6.344E-02)
5.9 -- 6.0	7.006E+00(1.243E-01)	2.235E+00(7.288E-02)	1.492E+00(5.975E-02)

<< $^{12}C(p,\alpha)$ Ep = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** I-2

Eα (MeV)	20 deg.	30 deg.	40 deg.
6.0 -- 6.1	4.730E+00(1.015E-01)	2.039E+00(6.982E-02)	1.463E+00(5.925E-02)
6.1 -- 6.2	3.919E+00(9.236E-02)	1.978E+00(6.896E-02)	1.442E+00(5.902E-02)
6.2 -- 6.3	3.554E+00(8.794E-02)	1.546E+00(6.113E-02)	1.321E+00(5.655E-02)
6.3 -- 6.4	3.077E+00(8.157E-02)	1.547E+00(6.182E-02)	1.387E+00(5.818E-02)
6.4 -- 6.5	2.848E+00(7.858E-02)	1.320E+00(5.709E-02)	1.687E+00(6.388E-02)
6.5 -- 6.6	2.728E+00(7.675E-02)	1.359E+00(5.767E-02)	1.321E+00(5.685E-02)
6.6 -- 6.7	2.175E+00(6.833E-02)	1.614E+00(6.296E-02)	8.948E-01(4.688E-02)
6.7 -- 6.8	2.067E+00(6.663E-02)	1.701E+00(6.541E-02)	7.068E-01(4.137E-02)
6.8 -- 6.9	2.016E+00(6.601E-02)	1.158E+00(5.385E-02)	6.833E-01(4.107E-02)
6.9 -- 7.0	2.258E+00(7.024E-02)	9.392E-01(4.830E-02)	9.003E-01(4.666E-02)
7.0 -- 7.1	2.203E+00(6.952E-02)	8.117E-01(4.541E-02)	1.335E+01(1.774E-01)
7.1 -- 7.2	1.420E+00(5.523E-02)	6.588E-01(4.030E-02)	3.189E+01(2.745E-01)
7.2 -- 7.3	1.265E+00(5.190E-02)	5.492E-01(3.661E-02)	4.668E+00(1.043E-01)
7.3 -- 7.4	9.854E-01(4.578E-02)	1.186E+00(5.257E-02)	1.386E-01(1.795E-02)
7.4 -- 7.5	8.641E-01(4.245E-02)	1.886E+01(2.071E-01)	1.037E-01(1.486E-02)
7.5 -- 7.6	7.214E-01(3.892E-02)	1.930E+01(2.093E-01)	3.926E-02(9.440E-03)
7.6 -- 7.7	6.277E-01(3.660E-02)	1.415E+00(5.649E-02)	4.441E-02(1.035E-02)
7.7 -- 7.8	2.603E+00(7.370E-02)	1.708E-01(1.931E-02)	4.312E-02(1.018E-02)
7.8 -- 7.9	2.781E+01(2.460E-01)	1.125E-01(1.597E-02)	2.141E-02(7.190E-03)
7.9 -- 8.0	1.539E+01(1.813E-01)	5.206E-02(1.092E-02)	8.610E-03(4.520E-03)
8.0 -- 8.1	9.175E-01(4.336E-02)	1.706E-02(6.420E-03)	1.340E-02(5.270E-03)
8.1 -- 8.2	1.387E-01(1.672E-02)	7.270E-03(3.730E-03)	1.350E-02(5.360E-03)
8.2 -- 8.3	8.888E-02(1.358E-02)	3.610E-03(2.550E-03)	3.640E-03(2.570E-03)
8.3 -- 8.4	6.952E-02(1.218E-02)	******** (********)	******** (********)
8.4 -- 8.5	7.070E-03(3.880E-03)	******** (********)	******** (********)
8.5 -- 8.6	4.220E-03(3.040E-03)	******** (********)	******** (********)
8.6 -- 8.7	1.011E-02(5.060E-03)	******** (********)	******** (********)
8.7 -- 8.8	1.690E-03(1.690E-03)	******** (********)	******** (********)
8.8 -- 8.9	******** (********)	******** (********)	******** (********)
8.9 -- 9.0	******** (********)	******** (********)	******** (********)

<< $^{12}C(p,\alpha)$ Ep = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** II-1

Eα (MeV)	50 deg.	60 deg.	70 deg.
1.0 -- 1.1	******** (********)	******** (********)	******** (********)
1.1 -- 1.2	******** (********)	******** (********)	******** (********)
1.2 -- 1.3	******** (********)	******** (********)	******** (********)
1.3 -- 1.4	******** (********)	******** (********)	******** (********)
1.4 -- 1.5	******** (********)	******** (********)	******** (********)
1.5 -- 1.6	******** (********)	2.641E+01(3.166E-01)	2.059E+01(2.704E-01)
1.6 -- 1.7	******** (********)	2.543E+01(3.108E-01)	1.747E+01(2.494E-01)
1.7 -- 1.8	******** (********)	2.388E+01(3.015E-01)	1.468E+01(2.282E-01)
1.8 -- 1.9	******** (********)	2.195E+01(2.882E-01)	1.143E+01(2.016E-01)
1.9 -- 2.0	******** (********)	1.962E+01(2.730E-01)	9.132E+00(1.801E-01)
2.0 -- 2.1	2.614E+01(5.350E-01)	1.662E+01(2.513E-01)	8.493E+00(1.735E-01)
2.1 -- 2.2	2.291E+01(5.015E-01)	1.394E+01(2.303E-01)	7.969E+00(1.684E-01)
2.2 -- 2.3	2.107E+01(4.784E-01)	1.177E+01(2.116E-01)	8.215E+00(1.707E-01)
2.3 -- 2.4	1.821E+01(4.459E-01)	1.065E+01(2.017E-01)	7.728E+00(1.658E-01)
2.4 -- 2.5	1.699E+01(4.319E-01)	9.674E+00(1.918E-01)	7.626E+00(1.650E-01)
2.5 -- 2.6	1.451E+01(4.000E-01)	9.413E+00(1.893E-01)	7.611E+00(1.644E-01)
2.6 -- 2.7	1.402E+01(3.932E-01)	9.136E+00(1.863E-01)	7.081E+00(1.588E-01)
2.7 -- 2.8	1.370E+01(3.921E-01)	8.854E+00(1.831E-01)	6.779E+00(1.555E-01)
2.8 -- 2.9	1.248E+01(3.707E-01)	8.843E+00(1.834E-01)	5.985E+00(1.459E-01)
2.9 -- 3.0	1.126E+01(3.519E-01)	9.256E+00(1.876E-01)	5.769E+00(1.436E-01)
3.0 -- 3.1	1.087E+01(3.465E-01)	8.209E+00(1.775E-01)	5.464E+00(1.394E-01)
3.1 -- 3.2	1.136E+01(3.545E-01)	7.250E+00(1.660E-01)	5.984E+00(1.465E-01)
3.2 -- 3.3	1.013E+01(3.344E-01)	6.969E+00(1.629E-01)	6.115E+00(1.480E-01)
3.3 -- 3.4	9.357E+00(3.230E-01)	6.278E+00(1.550E-01)	5.255E+00(1.368E-01)
3.4 -- 3.5	9.682E+00(3.292E-01)	6.053E+00(1.521E-01)	4.545E+00(1.275E-01)
3.5 -- 3.6	9.733E+00(3.308E-01)	5.664E+00(1.468E-01)	4.485E+00(1.260E-01)
3.6 -- 3.7	8.806E+00(3.154E-01)	5.509E+00(1.455E-01)	5.678E+00(1.421E-01)
3.7 -- 3.8	7.858E+00(2.978E-01)	5.174E+00(1.414E-01)	1.361E+01(2.208E-01)
3.8 -- 3.9	6.915E+00(2.775E-01)	4.917E+00(1.378E-01)	1.513E+01(2.328E-01)
3.9 -- 4.0	6.465E+00(2.685E-01)	4.656E+00(1.345E-01)	4.395E+00(1.251E-01)
4.0 -- 4.1	******** (********)	******** (********)	******** (********)
4.1 -- 4.2	******** (********)	******** (********)	******** (********)
4.2 -- 4.3	******** (********)	******** (********)	******** (********)
4.3 -- 4.4	******** (********)	******** (********)	******** (********)
4.4 -- 4.5	******** (********)	******** (********)	******** (********)
4.5 -- 4.6	6.317E+00(1.080E-01)	1.620E+00(5.646E-02)	7.166E-01(3.807E-02)
4.6 -- 4.7	1.340E+01(1.592E-01)	1.389E+00(5.296E-02)	5.989E-01(3.496E-02)
4.7 -- 4.8	1.096E+01(1.439E-01)	1.062E+00(4.624E-02)	5.702E-01(3.434E-02)
4.8 -- 4.9	3.541E+00(8.107E-02)	9.643E-01(4.401E-02)	4.781E-01(3.147E-02)
4.9 -- 5.0	2.083E+00(6.163E-02)	8.053E-01(3.997E-02)	3.702E-01(2.748E-02)
5.0 -- 5.1	1.404E+00(5.035E-02)	5.846E-01(3.425E-02)	2.729E-01(2.382E-02)
5.1 -- 5.2	1.103E+00(4.470E-02)	4.307E-01(2.959E-02)	2.175E-01(2.091E-02)
5.2 -- 5.3	1.017E+00(4.284E-02)	3.618E-01(2.694E-02)	2.521E-01(2.275E-02)
5.3 -- 5.4	9.803E-01(4.235E-02)	3.824E-01(2.767E-02)	3.667E-01(2.759E-02)
5.4 -- 5.5	1.042E+00(4.352E-02)	3.023E-01(2.435E-02)	4.331E-01(2.953E-02)
5.5 -- 5.6	9.746E-01(4.223E-02)	4.359E-01(2.944E-02)	8.255E+00(1.279E-01)
5.6 -- 5.7	9.601E-01(4.175E-02)	4.924E-01(3.129E-02)	3.056E+01(2.456E-01)
5.7 -- 5.8	1.017E+00(4.315E-02)	7.226E-01(3.798E-02)	8.068E+00(1.259E-01)
5.8 -- 5.9	9.568E-01(4.213E-02)	6.414E-01(3.583E-02)	2.224E-01(2.080E-02)
5.9 -- 6.0	8.890E-01(4.070E-02)	4.282E-01(2.960E-02)	5.429E-02(1.029E-02)

<< $^{12}C(p,\alpha)$ Ep = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** II-2

Eα (MeV)	50 deg.	60 deg.	70 deg.
6.0 -- 6.1	1.095E+00(4.499E-02)	2.943E+00(7.642E-02)	3.020E-02(7.820E-03)
6.1 -- 6.2	1.196E+00(4.671E-02)	3.482E+01(2.634E-01)	2.641E-02(7.350E-03)
6.2 -- 6.3	8.228E-01(3.904E-02)	2.598E+01(2.269E-01)	4.704E-02(9.690E-03)
6.3 -- 6.4	6.086E-01(3.347E-02)	1.053E+00(4.594E-02)	5.220E-02(1.026E-02)
6.4 -- 6.5	5.629E-01(3.227E-02)	5.498E-02(1.054E-02)	2.335E-02(7.040E-03)
6.5 -- 6.6	2.049E+00(6.154E-02)	2.755E-02(7.510E-03)	8.250E-03(4.190E-03)
6.6 -- 6.7	3.228E+01(2.449E-01)	2.158E-02(6.550E-03)	7.560E-03(3.850E-03)
6.7 -- 6.8	2.727E+01(2.251E-01)	4.948E-02(9.800E-03)	6.630E-03(3.420E-03)
6.8 -- 6.9	1.089E+00(4.470E-02)	3.916E-02(8.640E-03)	2.026E-02(6.420E-03)
6.9 -- 7.0	3.906E-02(8.330E-03)	1.136E-02(4.730E-03)	2.594E-02(7.370E-03)
7.0 -- 7.1	5.638E-02(1.009E-02)	5.310E-03(3.120E-03)	3.870E-03(2.760E-03)
7.1 -- 7.2	9.457E-02(1.304E-02)	1.441E-02(5.190E-03)	2.061E-02(6.300E-03)
7.2 -- 7.3	3.371E-02(7.440E-03)	6.240E-03(3.080E-03)	1.116E-02(4.570E-03)
7.3 -- 7.4	2.023E-02(6.030E-03)	3.290E-02(8.070E-03)	8.270E-03(3.920E-03)
7.4 -- 7.5	8.760E-03(4.030E-03)	4.170E-02(9.320E-03)	1.059E-02(4.780E-03)
7.5 -- 7.6	1.849E-02(5.830E-03)	9.600E-03(4.630E-03)	6.050E-03(3.550E-03)
7.6 -- 7.7	7.970E-03(3.720E-03)	2.660E-03(2.010E-03)	3.100E-03(2.530E-03)
7.7 -- 7.8	5.100E-03(3.090E-03)	1.631E-02(5.400E-03)	7.490E-03(4.060E-03)
7.8 -- 7.9	4.450E-02(9.060E-03)	1.572E-02(5.740E-03)	1.079E-02(4.830E-03)
7.9 -- 8.0	6.555E-02(1.106E-02)	4.360E-03(2.580E-03)	4.680E-02(1.003E-02)
8.0 -- 8.1	9.630E-03(4.280E-03)	9.840E-03(4.470E-03)	1.839E-02(6.120E-03)
8.1 -- 8.2	8.280E-03(3.770E-03)	******** (********)	5.859E-02(1.052E-02)
8.2 -- 8.3	1.388E-02(4.990E-03)	******** (********)	7.252E-02(1.186E-02)
8.3 -- 8.4	******** (********)	******** (********)	******** (********)
8.4 -- 8.5	******** (********)	******** (********)	******** (********)
8.5 -- 8.6	******** (********)	******** (********)	******** (********)
8.6 -- 8.7	******** (********)	******** (********)	******** (********)
8.7 -- 8.8	******** (********)	******** (********)	******** (********)
8.8 -- 8.9	******** (********)	******** (********)	******** (********)
8.9 -- 9.0	******** (********)	******** (********)	******** (********)

<< $^{12}C(p,\alpha)$ Ep = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** III-1

Eα (MeV)	80 deg.	90 deg.	100 deg.
1.0 -- 1.1	******** (********)	******** (********)	******** (********)
1.1 -- 1.2	******** (********)	******** (********)	******** (********)
1.2 -- 1.3	******** (********)	******** (********)	******** (********)
1.3 -- 1.4	******** (********)	******** (********)	******** (********)
1.4 -- 1.5	******** (********)	******** (********)	******** (********)
1.5 -- 1.6	1.194E+01(2.158E-01)	9.744E+00(1.889E-01)	9.115E+00(1.880E-01)
1.6 -- 1.7	1.019E+01(1.990E-01)	9.123E+00(1.830E-01)	8.501E+00(1.812E-01)
1.7 -- 1.8	9.249E+00(1.898E-01)	8.868E+00(1.797E-01)	8.471E+00(1.816E-01)
1.8 -- 1.9	8.366E+00(1.801E-01)	8.728E+00(1.788E-01)	7.327E+00(1.692E-01)
1.9 -- 2.0	8.366E+00(1.805E-01)	8.134E+00(1.721E-01)	6.250E+00(1.560E-01)
2.0 -- 2.1	8.152E+00(1.791E-01)	7.980E+00(1.710E-01)	5.110E+00(1.406E-01)
2.1 -- 2.2	8.031E+00(1.779E-01)	6.958E+00(1.595E-01)	4.982E+00(1.391E-01)
2.2 -- 2.3	7.511E+00(1.710E-01)	5.643E+00(1.431E-01)	4.636E+00(1.338E-01)
2.3 -- 2.4	7.302E+00(1.680E-01)	5.264E+00(1.387E-01)	4.384E+00(1.300E-01)
2.4 -- 2.5	7.185E+00(1.673E-01)	4.878E+00(1.333E-01)	4.461E+00(1.316E-01)
2.5 -- 2.6	6.275E+00(1.566E-01)	4.537E+00(1.285E-01)	7.139E+00(1.674E-01)
2.6 -- 2.7	5.226E+00(1.431E-01)	4.591E+00(1.296E-01)	9.391E+00(1.920E-01)
2.7 -- 2.8	5.379E+00(1.444E-01)	4.696E+00(1.307E-01)	5.217E+00(1.435E-01)
2.8 -- 2.9	4.867E+00(1.376E-01)	6.830E+00(1.571E-01)	2.131E+00(9.119E-02)
2.9 -- 3.0	4.595E+00(1.336E-01)	1.143E+01(2.029E-01)	1.773E+00(8.240E-02)
3.0 -- 3.1	4.506E+00(1.328E-01)	8.194E+00(1.717E-01)	1.553E+00(7.681E-02)
3.1 -- 3.2	4.568E+00(1.331E-01)	2.758E+00(1.000E-01)	1.243E+00(6.854E-02)
3.2 -- 3.3	6.990E+00(1.639E-01)	1.739E+00(7.968E-02)	1.228E+00(6.832E-02)
3.3 -- 3.4	1.454E+01(2.360E-01)	1.672E+00(7.818E-02)	1.092E+00(6.426E-02)
3.4 -- 3.5	1.058E+01(2.019E-01)	1.467E+00(7.392E-02)	9.478E-01(6.055E-02)
3.5 -- 3.6	3.323E+00(1.134E-01)	1.337E+00(6.989E-02)	9.252E-01(5.960E-02)
3.6 -- 3.7	2.174E+00(9.151E-02)	1.237E+00(6.820E-02)	7.804E-01(5.460E-02)
3.7 -- 3.8	1.547E+00(7.785E-02)	1.082E+00(6.312E-02)	6.378E-01(4.932E-02)
3.8 -- 3.9	1.503E+00(7.720E-02)	9.803E-01(6.085E-02)	5.304E-01(4.471E-02)
3.9 -- 4.0	1.250E+00(7.012E-02)	9.935E-01(6.116E-02)	5.622E-01(4.600E-02)
4.0 -- 4.1	******** (********)	******** (********)	1.480E+00(7.299E-02)
4.1 -- 4.2	******** (********)	******** (********)	7.528E+00(1.650E-01)
4.2 -- 4.3	******** (********)	******** (********)	4.242E+00(1.234E-01)
4.3 -- 4.4	******** (********)	******** (********)	2.244E-01(2.868E-02)
4.4 -- 4.5	******** (********)	******** (********)	1.489E-02(7.070E-03)
4.5 -- 4.6	5.345E-01(3.641E-02)	1.090E+01(1.690E-01)	******** (********)
4.6 -- 4.7	4.984E-01(3.520E-02)	5.295E+00(1.170E-01)	******** (********)
4.7 -- 4.8	4.899E-01(3.496E-02)	2.265E-01(2.397E-02)	******** (********)
4.8 -- 4.9	4.370E-01(3.305E-02)	3.311E-02(9.300E-03)	******** (********)
4.9 -- 5.0	1.790E+00(6.619E-02)	2.439E-02(7.860E-03)	******** (********)
5.0 -- 5.1	9.729E+00(1.539E-01)	8.340E-03(4.310E-03)	******** (********)
5.1 -- 5.2	7.148E+00(1.318E-01)	1.171E-02(5.250E-03)	******** (********)
5.2 -- 5.3	4.708E-01(3.365E-02)	1.006E-02(4.940E-03)	******** (********)
5.3 -- 5.4	3.459E-02(9.330E-03)	1.390E-02(5.640E-03)	******** (********)
5.4 -- 5.5	2.870E-02(8.580E-03)	3.765E-02(9.120E-03)	******** (********)
5.5 -- 5.6	1.855E-02(6.970E-03)	5.028E-02(1.048E-02)	******** (********)
5.6 -- 5.7	2.431E-02(7.680E-03)	1.375E-02(5.900E-03)	******** (********)
5.7 -- 5.8	1.434E-02(5.880E-03)	1.004E-02(5.010E-03)	******** (********)
5.8 -- 5.9	5.214E-02(1.085E-02)	1.744E-02(6.210E-03)	******** (********)
5.9 -- 6.0	5.574E-02(1.115E-02)	9.200E-03(4.920E-03)	******** (********)

<< $^{12}C(p,\alpha)$ Ep = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** III-2

Eα (MeV)	80 deg.	90 deg.	100 deg.
6.0 -- 6.1	2.124E-02(7.130E-03)	1.121E-02(5.470E-03)	******** (********)
6.1 -- 6.2	5.820E-03(3.990E-03)	2.273E-02(7.210E-03)	******** (********)
6.2 -- 6.3	9.100E-03(4.400E-03)	1.288E-02(5.420E-03)	******** (********)
6.3 -- 6.4	2.355E-02(7.550E-03)	7.570E-03(4.430E-03)	******** (********)
6.4 -- 6.5	1.444E-02(5.740E-03)	7.680E-03(3.840E-03)	******** (********)
6.5 -- 6.6	5.950E-03(3.760E-03)	1.514E-02(6.130E-03)	******** (********)
6.6 -- 6.7	1.352E-02(5.540E-03)	7.570E-03(4.620E-03)	******** (********)
6.7 -- 6.8	1.179E-02(5.260E-03)	5.650E-03(3.990E-03)	******** (********)
6.8 -- 6.9	1.241E-02(5.050E-03)	1.439E-02(5.720E-03)	******** (********)
6.9 -- 7.0	1.522E-02(6.160E-03)	1.171E-02(5.370E-03)	******** (********)
7.0 -- 7.1	5.570E-03(3.570E-03)	1.903E-02(7.210E-03)	******** (********)
7.1 -- 7.2	8.200E-03(4.740E-03)	1.318E-02(5.650E-03)	******** (********)
7.2 -- 7.3	8.200E-03(4.740E-03)	5.254E-02(1.123E-02)	******** (********)
7.3 -- 7.4	1.020E-02(5.180E-03)	1.155E-01(1.708E-02)	******** (********)
7.4 -- 7.5	1.367E-02(5.650E-03)	4.574E-02(1.071E-02)	******** (********)
7.5 -- 7.6	1.154E-02(5.130E-03)	7.570E-03(4.430E-03)	******** (********)
7.6 -- 7.7	2.492E-02(7.560E-03)	2.820E-03(2.820E-03)	******** (********)
7.7 -- 7.8	5.539E-02(1.109E-02)	******** (********)	******** (********)
7.8 -- 7.9	5.910E-02(1.215E-02)	2.460E-03(2.170E-03)	******** (********)
7.9 -- 8.0	9.454E-02(1.526E-02)	8.880E-03(4.430E-03)	******** (********)
8.0 -- 8.1	2.413E-02(7.380E-03)	1.080E-03(1.440E-03)	******** (********)
8.1 -- 8.2	1.001E-02(5.230E-03)	5.650E-03(3.990E-03)	******** (********)
8.2 -- 8.3	1.870E-03(1.870E-03)	4.740E-03(3.410E-03)	******** (********)
8.3 -- 8.4	******** (********)	1.920E-03(1.920E-03)	******** (********)
8.4 -- 8.5	******** (********)	******** (********)	******** (********)
8.5 -- 8.6	******** (********)	******** (********)	******** (********)
8.6 -- 8.7	******** (********)	******** (********)	******** (********)
8.7 -- 8.8	******** (********)	******** (********)	******** (********)
8.8 -- 8.9	******** (********)	******** (********)	******** (********)
8.9 -- 9.0	******** (********)	******** (********)	******** (********)

<< $^{12}C(p,\alpha)$ Ep = 16 MeV >> *** DDX (error) in [mb/MeV/sr] *** IV-1

Eα (MeV)	110 deg.	120 deg.	130 deg.
1.0 -- 1.1	******** (********)	******** (********)	******** (********)
1.1 -- 1.2	******** (********)	******** (********)	******** (********)
1.2 -- 1.3	******** (********)	******** (********)	******** (********)
1.3 -- 1.4	******** (********)	******** (********)	******** (********)
1.4 -- 1.5	******** (********)	******** (********)	******** (********)
1.5 -- 1.6	7.584E+00(1.716E-01)	5.290E+00(1.435E-01)	4.559E+00(1.336E-01)
1.6 -- 1.7	6.730E+00(1.616E-01)	4.652E+00(1.343E-01)	4.665E+00(1.348E-01)
1.7 -- 1.8	5.401E+00(1.443E-01)	4.579E+00(1.323E-01)	5.004E+00(1.401E-01)
1.8 -- 1.9	5.010E+00(1.394E-01)	4.493E+00(1.315E-01)	6.726E+00(1.638E-01)
1.9 -- 2.0	4.834E+00(1.369E-01)	4.716E+00(1.354E-01)	7.709E+00(1.761E-01)
2.0 -- 2.1	4.510E+00(1.321E-01)	7.212E+00(1.680E-01)	3.528E+00(1.187E-01)
2.1 -- 2.2	4.563E+00(1.329E-01)	7.421E+00(1.703E-01)	1.521E+00(7.671E-02)
2.2 -- 2.3	5.718E+00(1.492E-01)	3.374E+00(1.148E-01)	1.240E+00(6.912E-02)
2.3 -- 2.4	8.360E+00(1.813E-01)	1.597E+00(7.852E-02)	1.020E+00(6.339E-02)
2.4 -- 2.5	5.459E+00(1.461E-01)	1.246E+00(6.923E-02)	6.776E-01(5.150E-02)
2.5 -- 2.6	2.112E+00(9.049E-02)	9.089E-01(5.934E-02)	5.872E-01(4.846E-02)
2.6 -- 2.7	1.474E+00(7.510E-02)	7.904E-01(5.541E-02)	4.520E-01(4.232E-02)
2.7 -- 2.8	1.295E+00(7.086E-02)	6.457E-01(4.991E-02)	4.697E-01(4.384E-02)
2.8 -- 2.9	1.058E+00(6.379E-02)	6.371E-01(4.989E-02)	3.523E-01(3.698E-02)
2.9 -- 3.0	8.909E-01(5.812E-02)	4.533E-01(4.191E-02)	3.662E-01(3.739E-02)
3.0 -- 3.1	8.638E-01(5.801E-02)	4.466E-01(4.173E-02)	6.128E-01(4.750E-02)
3.1 -- 3.2	7.208E-01(5.278E-02)	3.908E-01(3.906E-02)	6.980E+00(1.590E-01)
3.2 -- 3.3	7.156E-01(5.299E-02)	3.171E-01(3.505E-02)	6.933E+00(1.584E-01)
3.3 -- 3.4	5.185E-01(4.475E-02)	1.341E+00(6.926E-02)	3.108E-01(3.387E-02)
3.4 -- 3.5	4.571E-01(4.256E-02)	8.448E+00(1.737E-01)	3.739E-01(3.816E-02)
3.5 -- 3.6	3.513E-01(3.674E-02)	3.706E+00(1.146E-01)	2.437E-01(3.039E-02)
3.6 -- 3.7	7.390E-01(5.121E-02)	2.452E-01(3.088E-02)	4.472E-02(1.355E-02)
3.7 -- 3.8	5.832E+00(1.441E-01)	2.698E-01(3.220E-02)	2.435E-02(9.790E-03)
3.8 -- 3.9	5.197E+00(1.357E-01)	5.400E-02(1.444E-02)	1.875E-02(8.670E-03)
3.9 -- 4.0	4.698E-01(4.159E-02)	2.136E-02(8.550E-03)	3.817E-02(1.256E-02)
4.0 -- 4.1	1.477E-01(2.389E-02)	2.384E-02(9.820E-03)	2.881E-02(1.116E-02)
4.1 -- 4.2	4.431E-02(1.262E-02)	2.690E-02(1.051E-02)	6.182E-02(1.559E-02)
4.2 -- 4.3	3.122E-02(1.090E-02)	5.412E-02(1.454E-02)	9.378E-02(1.943E-02)
4.3 -- 4.4	9.160E-03(5.820E-03)	3.589E-02(1.197E-02)	3.485E-02(1.167E-02)
4.4 -- 4.5	4.370E-03(4.370E-03)	8.910E-03(5.560E-03)	3.000E-03(3.000E-03)
4.5 -- 4.6	******** (********)	******** (********)	******** (********)
4.6 -- 4.7	******** (********)	******** (********)	******** (********)
4.7 -- 4.8	******** (********)	******** (********)	******** (********)
4.8 -- 4.9	******** (********)	******** (********)	******** (********)
4.9 -- 5.0	******** (********)	******** (********)	******** (********)

<< $^{12}C(p,\alpha)$ Ep = 16 MeV >> *** DDX (error) in [mb/MeV/sr] ***

Eα (MeV)	140 deg.	150 deg.	160 deg.
1.0 -- 1.1	******** (********)	******** (********)	******** (********)
1.1 -- 1.2	******** (********)	******** (********)	******** (********)
1.2 -- 1.3	******** (********)	******** (********)	******** (********)
1.3 -- 1.4	******** (********)	******** (********)	******** (********)
1.4 -- 1.5	******** (********)	******** (********)	******** (********)
1.5 -- 1.6	4.599E+00(1.306E-01)	6.042E+00(1.504E-01)	8.065E+00(1.796E-01)
1.6 -- 1.7	5.529E+00(1.439E-01)	8.582E+00(1.823E-01)	6.899E+00(1.665E-01)
1.7 -- 1.8	8.382E+00(1.791E-01)	5.956E+00(1.513E-01)	2.592E+00(1.005E-01)
1.8 -- 1.9	6.177E+00(1.541E-01)	1.991E+00(8.612E-02)	1.461E+00(7.477E-02)
1.9 -- 2.0	2.319E+00(9.305E-02)	1.260E+00(6.829E-02)	1.051E+00(6.376E-02)
2.0 -- 2.1	1.439E+00(7.297E-02)	9.295E-01(5.822E-02)	9.118E-01(5.924E-02)
2.1 -- 2.2	9.666E-01(5.962E-02)	6.776E-01(5.004E-02)	5.963E-01(4.769E-02)
2.2 -- 2.3	7.159E-01(5.169E-02)	6.604E-01(4.898E-02)	5.128E-01(4.389E-02)
2.3 -- 2.4	6.582E-01(4.969E-02)	5.247E-01(4.360E-02)	4.828E-01(4.311E-02)
2.4 -- 2.5	4.984E-01(4.300E-02)	4.753E-01(4.230E-02)	3.206E-01(3.533E-02)
2.5 -- 2.6	3.916E-01(3.763E-02)	3.495E-01(3.573E-02)	4.374E-01(4.069E-02)
2.6 -- 2.7	3.334E-01(3.484E-02)	4.711E-01(4.148E-02)	3.626E+00(1.155E-01)
2.7 -- 2.8	3.214E-01(3.405E-02)	3.746E+00(1.145E-01)	4.724E+00(1.324E-01)
2.8 -- 2.9	8.495E-01(5.526E-02)	7.372E+00(1.615E-01)	4.462E-01(4.052E-02)
2.9 -- 3.0	7.508E+00(1.629E-01)	9.145E-01(5.679E-02)	1.130E-01(2.096E-02)
3.0 -- 3.1	5.745E+00(1.423E-01)	1.503E-01(2.412E-02)	2.343E-01(3.074E-02)
3.1 -- 3.2	1.977E-01(2.670E-02)	2.593E-01(3.102E-02)	1.202E-01(2.147E-02)
3.2 -- 3.3	2.414E-01(2.973E-02)	1.427E-01(2.288E-02)	5.270E-02(1.414E-02)
3.3 -- 3.4	2.502E-01(3.031E-02)	7.582E-02(1.719E-02)	5.983E-02(1.537E-02)
3.4 -- 3.5	3.368E-02(1.116E-02)	1.689E-02(7.760E-03)	6.891E-02(1.650E-02)
3.5 -- 3.6	4.440E-02(1.282E-02)	3.928E-02(1.168E-02)	6.396E-02(1.595E-02)
3.6 -- 3.7	3.099E-02(1.085E-02)	3.705E-02(1.182E-02)	5.281E-02(1.435E-02)
3.7 -- 3.8	3.616E-02(1.189E-02)	3.752E-02(1.228E-02)	1.567E-01(2.494E-02)
3.8 -- 3.9	2.683E-02(1.041E-02)	1.084E-01(2.067E-02)	6.072E-02(1.521E-02)
3.9 -- 4.0	4.740E-02(1.351E-02)	6.632E-02(1.639E-02)	7.348E-02(1.734E-02)
4.0 -- 4.1	8.253E-02(1.792E-02)	3.107E-02(9.630E-03)	7.550E-02(1.748E-02)
4.1 -- 4.2	1.030E-02(6.350E-03)	6.819E-02(1.566E-02)	2.626E-02(1.018E-02)
4.2 -- 4.3	3.473E-02(1.156E-02)	2.126E-02(8.910E-03)	1.524E-02(7.680E-03)
4.3 -- 4.4	2.222E-02(8.870E-03)	4.100E-04(1.100E-03)	1.049E-02(6.160E-03)
4.4 -- 4.5	2.720E-03(3.370E-03)	2.500E-03(2.690E-03)	******** (********)
4.5 -- 4.6	******** (********)	1.540E-03(2.120E-03)	******** (********)
4.6 -- 4.7	******** (********)	1.370E-03(2.000E-03)	******** (********)
4.7 -- 4.8	******** (********)	******** (********)	******** (********)
4.8 -- 4.9	******** (********)	******** (********)	******** (********)
4.9 -- 5.0	******** (********)	******** (********)	******** (********)

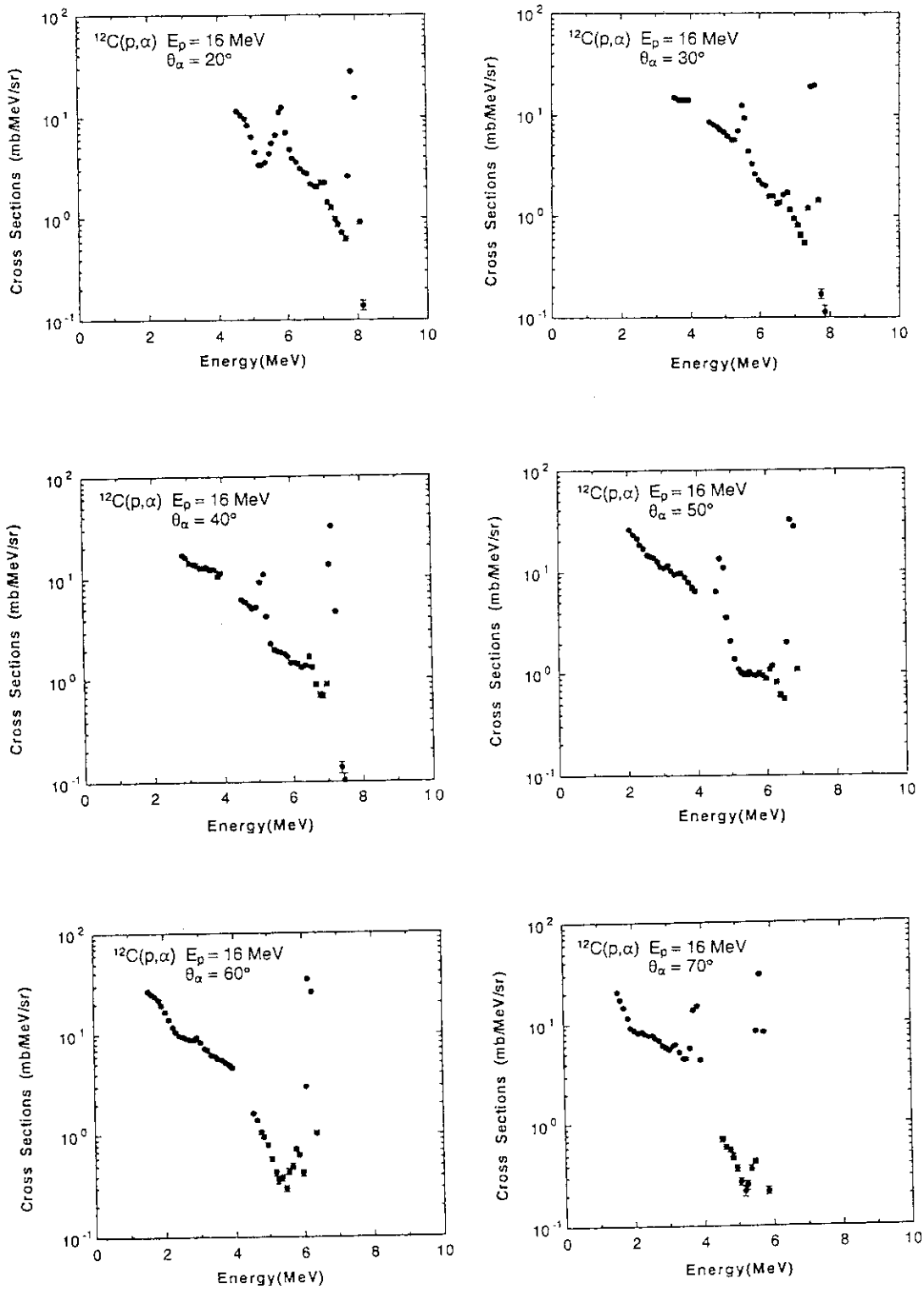

Fig. A-3. Differential cross sections of the $^{12}C(p,\alpha x)$ reaction at 16 MeV.

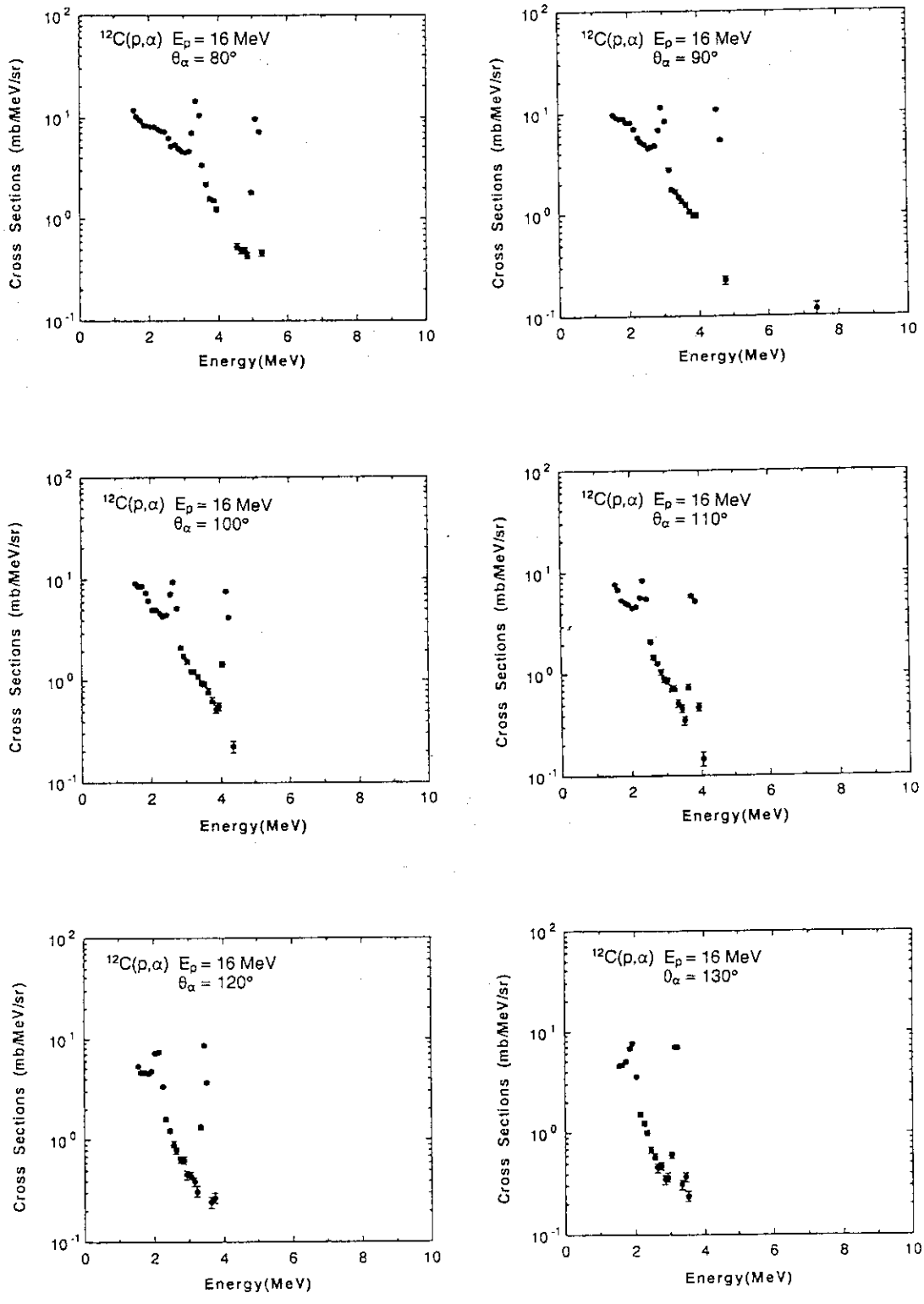

Fig. A-3. Continued.

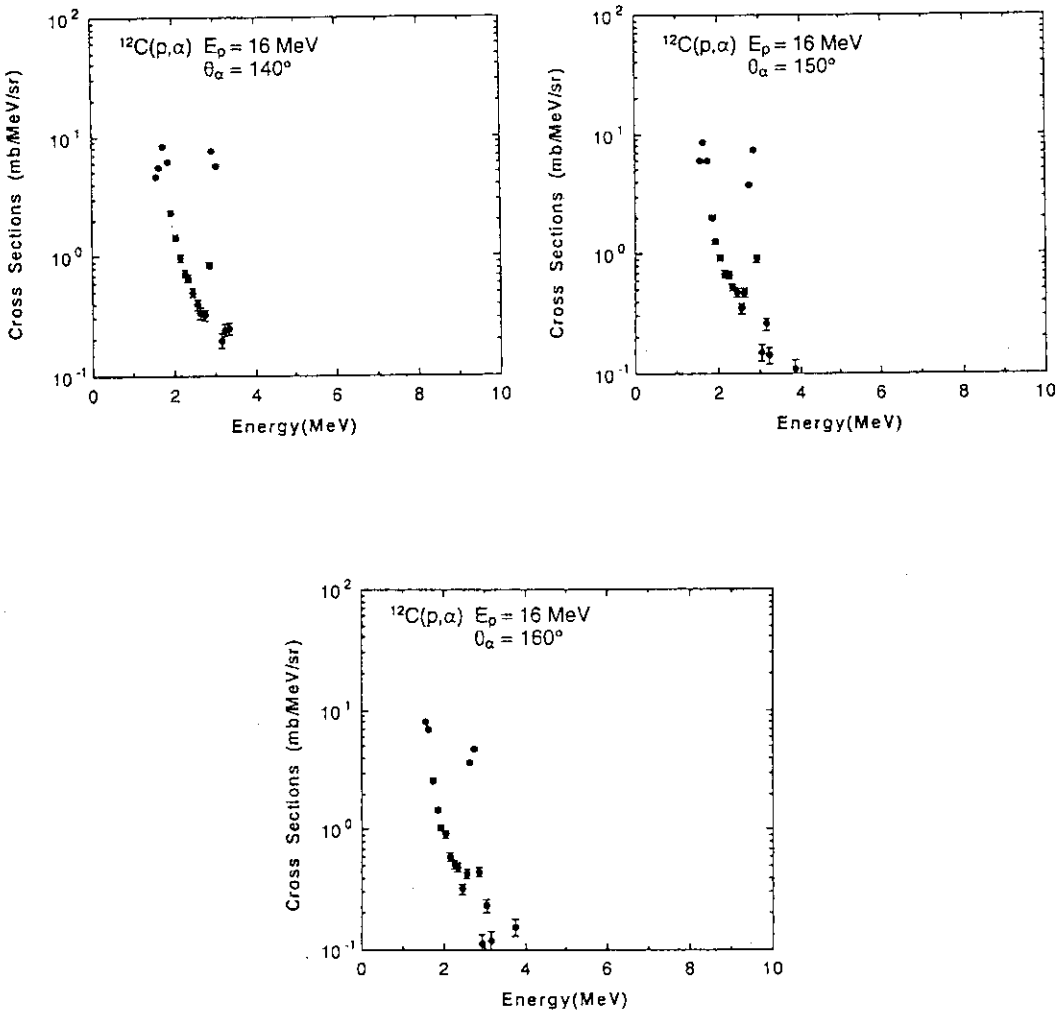

Fig. A-3. Continued.