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POLARIZED PROTON SCATTERING ON LITHIUM
ISOTOPES AT 14 MeV

November 1989

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Differential cross sections, analyzing powers, and double differential cross sections for the ${}^6, {}^7\text{Li}(p,p')$ scattering have been measured at an incident energy of 14 MeV. Experimental procedures and results are briefly described. The experimental data of the elastic scattering have excellently been reproduced by calculations based on the spherical optical model (SOM) and the coupled channel (CC) method. The DWBA and CC calculations have not correctly predicted the analyzing powers in the inelastic channels leading to the 1st and 2nd excited states of ${}^6, {}^7\text{Li}$. The three-body breakup process observed in the (p,p') continuum spectra has been qualitatively explained by DWBA calculations with the discretized-continuum states. The experimental and theoretical results are compared with neutron scattering data. Studies on proton scattering are valuable for modelling of nuclear reactions and for evaluation of neutron scatterings.

Keywords: Differential Cross Sections, Analyzing Powers, 14.0 MeV, ${}^6\text{Li}$, ${}^7\text{Li}$, Double Differential Cross Sections

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14 MeV におけるリチウム同位体による偏極陽子の散乱

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$^{6,7}\text{Li}$ (p, p') 散乱に対する微分断面積、偏極分析能、二重微分断面積を入射エネルギー 14 MeVにおいて測定した。実験方法と結果を報告する。弾性散乱の実験データは球形光学模型とチャネル結合法によって非常に良く再現される。しかし、 $^{6,7}\text{Li}$ の第一、第二励起準位への非弹性散乱の偏極分析能は、歪曲波ボルン近似、チャネル結合法によっては正しく推定されない。 (p, p') 散乱の連続スペクトルに観測される三体崩壊過程の寄与は、離散化連続状態に対する歪曲波ボルン近似の計算によって定性的に説明できる。陽子散乱の実験的および理論的結果を中心性子散乱のデータと比較した結果、陽子散乱に関する詳細な研究は、核反応のモデル化および中心性子散乱データの評価にとって重要な知見を与えることが明らかになった。

本報告書は、日本原子力研究所が昭和 63 年度に九州大学に委託して行なった研究の成果である。

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1. Introduction

Nuclear data for $^{6,7}\text{Li}$ isotopes are important for fusion reactor development. Especially, tritium production cross sections and double differential cross sections (DDX) of inelastic scatterings are related to the tritium breeding ratio in the reactor and neutron transport in the reactor blanket. Precise measurements were recently reported on the $^7\text{Li}(n,t)$ reaction and $^6\text{Li}(n,n')$ scattering[1-4] to refine their nuclear data. Moreover, an evaluated data library JENDL-3 has very recently become available for use in the development. In the evaluation of nuclear data for lithium isotopes, experimental data were treated by means of rather simple theories[5], because of difficulties in theoretical analyses of reactions including three-body breakup processes. It is highly necessary to establish nuclear theories for evaluation of reactions involving lithium isotopes.

As recently reported, the coupled discretized-continuum channel (CDCC) calculation has well reproduced lithium breakup reactions[6]. Three-body breakup reactions of simple nuclear systems have successfully been analyzed in the framework of the Faddeev approach[7]. Precise double differential cross sections and analyzing powers, therefore, have to be measured for study of their adoptability to the reactions. Proton induced reactions are preferable to the purpose, being superior in precision against neutron induced reactions.

The optical potentials for $^{6,7}\text{Li}$ have been determined without the data of analyzing powers; the spin dependent terms of V_{SO} , r_{SO} and a_{SO} were fixed a priori in the potential search[2]. Moreover, since the 1st excited state (0.478 MeV) peak of ^7Li could not be separated from the elastic peak in the $^7\text{Li}(n,n')$ scattering by means of TOF spectrometers, the optical potential for ^7Li was searched by use of only differential cross sections involving the ground and 1st excited states[2]. Although analyzing powers have been measured for the $^6\text{Li}(n,n)$ elastic scattering around 14 MeV, polarization data have not been reported for inelastic scatterings because of low intensity of polarized neutron beams.

On the other hand, experimental data of polarized proton induced reactions on the lithium isotopes are very scarce even in an energy region of 10-18 MeV. Hence, systematic studies of the scattering and reaction on the lithium isotopes by use of polarized proton beams will give valuable information for modelling of nuclear reactions for the isotopes.

In this report, we will describes our experimental data of $^{6,7}\text{Li}(p,p')$ scattering measured at 14 MeV; especially, data of analyzing powers for the elastic and inelastic scatterings and of continuum energy spectra (DDX) of the (p,p') scattering. These data will be discussed on the basis of theoretical calculations.

2. Experimental Procedure

Polarized and unpolarized proton beams from the tandem Van de Graaff accelerator at Kyushu University were used for measurements of ${}^{6,7}\text{Li}(\text{p},\text{p}')$ scattering at an incident energy of 14.0 MeV. Emitted particles were detected with a counter telescope, which consisted of 15.5 μm and 75 μm thick transmission-type Si detectors (referred to as E1 and E2 detector, respectively) and a 2000 μm thick Si detector (referred to as E3 detector); the solid angle of the counter telescope was 0.297 msr. Energy spectra were measured separately in a low energy region (1 MeV - several MeV for protons) and in a high energy region (above 2.5 MeV for protons), so that good particle identification could be obtained with E1 or E2 detector as an energy loss detector. The lowest energy in the measurement was 1.0 MeV for protons. The over-all energy resolution for protons was about 95 keV in fwhm, which was mainly due to the kinematical spreading.

The measurements were carried out at every 10° from 10° to 160° and 165° . The beam current was selected to be about 10 nA for forward angles of 10° and 20° to avoid counting losses in the data acquisition system and to be 100 - 200 nA for the other angles. Self-supporting Li metallic foils of about 1 mg/cm² thick (enrichments: 95.59% for ${}^6\text{Li}$, and 99.99% for ${}^7\text{Li}$) were prepared by the vacuum evaporation method.

The beam polarization, which was monitored with a polarimeter at the down stream of the scattering chamber, was about 0.8 during the measurements. The polarimeter consisted of a ${}^4\text{He}$ gas target and a pair of $\Delta\text{E}+\text{E}$ Si detectors fixed at $\pm 113^\circ$ with respect to the beam direction[8], where the analyzing power of ${}^4\text{He}$ was known to be 1.00 - 0.98 for 12 - 16 MeV protons[9].

3. Experimental Results

3.1 ${}^6\text{Li}(\text{p},\text{p}')$ scattering

(i) Discrete states: The ground state and the 1st and 2nd excited states.

The measured differential cross sections and analyzing powers are shown in Fig. 1 for the ground (1^+) state, and the 1st (2.185 MeV, 3^+) and 2nd (3.562 MeV, 0^+) excited states. Errors associated to the data points are smaller than their point size, except for the 2nd excited state, for which only differential cross sections are shown. The lines in the figure indicate results of theoretical calculations, which will be described later.

(ii) Continuum region:

Figure 2 shows the measured DDX spectra of the ${}^6\text{Li}(p,p')$ scattering; the energy bin of the spectra is 0.1 MeV. The contaminated peaks of the scattering from ${}^7\text{Li}$, ${}^1\text{H}$, ${}^{12}\text{C}$, and ${}^{16}\text{O}$ are not corrected (these peaks were used for the energy calibration of the spectra). The continuum region of spectra are mainly due to the ${}^6\text{Li}(p,p')\alpha$ three-body breakup reaction process. Contribution from the ${}^6\text{Li}(p,2p)\alpha$ reaction seems to dominate at low energies.

3.2 ${}^7\text{Li}(p,p')$ scattering

(i) Discrete states: The ground state and the 1st and 2nd excited states.

The measured differential cross sections and analyzing powers are shown in Fig. 3 for the ground ($3/2^-$) state, and the 1st (0.478MeV, $1/2^-$) and 2nd (4.63MeV, $7/2^-$) excited states. Errors associated to the data points are smaller than their point size. As similar to Fig. 1, the lines indicate theoretical results.

(ii) Continuum region:

The measured DDX spectra of the ${}^7\text{Li}(p,p')$ scattering are shown in Fig. 4. The continuum region of spectra are mainly due to the ${}^7\text{Li}(p,p')\alpha$ three-body breakup process. The contaminated peaks are not corrected similarly to the case of ${}^6\text{Li}(p,p')$ scattering.

3.3 Numerical data

The measured data in numerical form are tabulated in Appendices, and are available in a diskette.

- Appendix 1. Differential cross sections and analyzing powers for the ${}^6\text{Li}(p,p_0)$, ${}^6\text{Li}(p,p_1)$, and ${}^6\text{Li}(p,p_2)$ scattering
- Appendix 2. Double differential cross sections (energy spectra) for the ${}^6\text{Li}(p,p')$ scattering
- Appendix 3. Differential cross sections and analyzing powers for the ${}^7\text{Li}(p,p_0)$, ${}^7\text{Li}(p,p_1)$, and ${}^7\text{Li}(p,p_2)$ scattering
- Appendix 4. Double differential cross sections (energy spectra) for the ${}^7\text{Li}(p,p')$ scattering

3.4 Errors

Errors in the differential cross sections were estimated on the basis of statistical errors in counts involved in the discrete peaks, background and contaminated peaks; two of the latter were subtracted from the former. An uncertainty of 2% was taken into account for the estimation of subtracted counts. The counts in peaks and backgrounds were obtained using a peak fitting program FOGRAS[10]. A systematic error of 2% was added to the estimated statistical errors of the cross sections using the error propagation formula. The absolute values have a systematic uncertainty of about 10% due to the target thickness. This uncertainty is not included in the errors indicated in figures and tables. On the other hand, errors of the DDX for energy bins, which are given in the numerical tables in Appendices, are statistical only.

For the analyzing powers, statistical errors of the discrete peaks measured with polarized and unpolarized beams were estimated similarly to those for the differential cross sections. Errors in the beam polarization were estimated from errors in counts from the left and right detectors of the polarimeter and from a systematic error of 5%. The beam polarization was calculated by use of the analyzing power of ${}^4\text{He}$ [9]; the obtained beam polarization was about 83% in average. Propagation of the errors were taken into account in the calculation of analyzing powers. A systematic error of 2% was added to the estimated errors of the analyzing powers using the error propagation formula.

4. Theoretical Analyses and Discussion

4.1 Spherical optical model (SOM) analysis

On the basis of the spherical optical model (SOM), the optical potential parameters inclusive of the spin dependent terms were searched with the data sets of differential cross sections and analyzing powers of the elastic scattering. The search was performed by means of the ECIS79 code[11]. The standard form of optical potential with the Woods-Saxson type form factor was assumed in the ECIS79 code. As indicated for the elastic scattering by solid lines in Figs. 1 and 3, good fits were obtained not only for differential cross sections but also for analyzing powers. The obtained parameters are listed in Table 1 and 2, and compared with Bray et al.[12], Dave et al.[13] and Chiba et al.[2], whose potential parameters were obtained without data of analyzing powers (i.e., the spin dependent terms were fixed a priori).

4.2 DWBA analysis of inelastic scattering

The inelastic scattering was calculated with a DWBA code DWUCK[14] on the basis of the optical potential parameters obtained above. In the calculation, the momentum transferred was assumed to be $l=2$ for both $^{6,7}\text{Li}$. The deformation parameter β_2 was determined for the 1st excited state of ^6Li and the 1st and 2nd excited states of ^7Li so that their differential cross sections were reproduced well. As summarized in Table 3, the obtained deformation parameters are consistent with those obtained from other experiments. This may suggest the rotational properties of these excited states of $^{6,7}\text{Li}$.

The calculated results are shown for the excited states of differential cross sections and analyzing powers by solid lines in Figs.1 and 3. The calculated angular distributions cannot explain well at forward and backward angles, and furthermore the calculated analyzing powers indicate different phase from the measured.

We tried to calculate the angular distribution for ^6Li with the form factors that were derived on the basis of a microscopic cluster model by Sakuragi et al. The fit to the experimental data is not improved as shown by dotted lines in Fig. 1. Since only the real part of the form factors were available for the microscopic cluster model, it may be important to estimate their imaginary part. If the optical potential of Bray et al. was employed for the calculation, the angular distribution of the inelastic scattering was reproduced better in spite of the fact that the fit in the elastic scattering worsened at backward angles. A calculation with the potential of Dave et al. provided a similar fit as the calculation with the presently obtained potential. Neither the optical potential of Bray et al. nor of Dave et al. could improve the fit in the analyzing powers.

Since the 2nd excited state of ^6Li is an isobaric analog state of ^6He and ^6Be , the rotational model could not be applied and hence the angular distributions were not analyzed for this state.

4.3 Coupled channel (CC) calculation

The coupled channel (CC) calculation was performed with the ECIS79 code[11], in which three lowest states in the rotational model were assumed to be coupled each other; the coupled states are the ground (1^+), 1st excited (2.185 MeV, 3^+) and 3rd excited (4.31 MeV, 2^+) states belonging to the $K=1$ band for ^6Li , and the ground ($3/2^-$), 1st excited (0.468 MeV, $1/2^-$) and 2nd excited (4.63 MeV, $7/2^-$) states belonging to the $K=1/2$ band for ^7Li [15]. Starting from the resultant parameters from the spherical optical model (SOM) calculation, the ECIS79 code searched the optical potential and deformation parameters so as to give a good fit with the measured data. The differential cross sections for the ground, 1st excited

states and the analyzing powers for the ground states were used as a reference for ${}^6\text{Li}$. Similarly, the differential cross sections for the ground, 1st excited and 2nd excited states and the analyzing powers for the ground state were employed as the reference for ${}^7\text{Li}$. The obtained parameters are listed in Table 1 and 2. The calculated results are shown by dashed lines in Figs. 1 and 3. Even the coupled channel calculation could not reproduce well the analyzing powers of the inelastic scatterings.

4.4 Optical potential for exit channel

The optical potentials derived from the SOM analysis were used for the entrance and exit channels in the DWBA and CC calculations described above. For the exit channel, an energy dependence in the V and W parameters was taken into account for the potentials. As mentioned above, the inelastic scatterings were not reproduced so well, while both differential cross sections and analyzing powers of the elastic scattering were fitted well. Since the excited states of ${}^6\text{Li}$ (2.185 MeV, 3^+) and ${}^7\text{Li}$ (4.63 MeV, $7/2^-$) can decay into the channels $d+\alpha$ and $t+\alpha$, respectively, the optical potential for these exit channels may be different from those of the entrance channels. We tried to search the potential for the exit channel. Then, appreciable improvement was obtained for the analyzing powers as shown in Figs. 5 and 6. The obtained potential parameters for the exit channels are summarized in Table 1 and 2.

The angular distributions for the inelastic scattering are appreciably ameliorated at forward angles and the analyzing powers also improved in its fit. If the obtained parameters are compared with those of the entrance channel, it can be say the excited states spread very much and this is reasonable in an image of the decaying states.

4.5 DWBA calculation for discretized-continuum states

Although the CDCC calculation, which has been developed by Kamimura et al.[6], is possible for the reactions including three-body breakup processes in the exit channel, the calculation is too complex to reproduce the energy spectra. The proton continuum spectra of the ${}^6,7\text{Li} + p$ reactions are affected mainly by the ${}^6\text{Li}(p,p')d\alpha$ or ${}^7\text{Li}(p,p')t\alpha$ three-body breakup processes. Instead of complete CDCC calculations, we calculated the spectrum in the framework of the DWBA by use of the ${}^6\text{Li}$ and ${}^7\text{Li}$ form factors extended to resonant and non-resonant continuum states. The form factors were obtained on the basis of a microscopic $d-\alpha$ and $t-\alpha$ cluster model by Sakuragi et al.[16] The resonant and non-resonant discretized-continuum states taken into account are depicted in Fig. 7. Transition probabilities were calculated for the transitions from the ground state to 27 excited states (inclusive of 23

discretized-continuum states) for ${}^6\text{Li}$, and to 15 excited states (inclusive of 11 discretized-continuum states) for ${}^7\text{Li}$. The optical potential derived from the SOM calculation was used for the entrance channel. The real (V) and imaginary (W) parts of the central force in the potential for the exit channel assumed to have energy dependences given by Dave and Gould[16]:

$$V = V_0 - 0.02 E_c \quad \text{and} \quad W = W_0 + 0.237 E_c,$$

where E_c is the CM energy of emitted protons, and the parameters of V_0 and W_0 are determined so as to reproduce the searched potential depths V and W at the present incident energy.

Proton energy spectra were constructed from the 27 or 15 calculated angular distributions; the resonant and non-resonant components were added incoherently. The resonant components of the excited states were spread in accordance to the Lorentzian distribution[16]. After the calculated spectra were normalized with an optimized factor, the spectra were compared with the measured ones as shown in Fig. 8. The non-resonant breakups are presented by dashed lines and the total breakups including resonant ones by solid lines in the figures. Good agreements are indicated in rather wide region. The DWBA calculation with the form factors for discretized-continuum states explains qualitatively the measured continuum spectra. The measured angular variation of the spectra, however, was not reproduced, because the results of DWBA calculations did not agree so well with the angular distributions of the 1st (3^+) excited state of ${}^6\text{Li}$ and the 2nd ($7/2^-$) excited state of ${}^7\text{Li}$. The underestimation at low energies may be attributed to the DWBA framework and to the contribution from the ${}^6\text{Li}(p,2p)n\alpha$ four-body breakup process for ${}^6\text{Li}$. Improvement may be obtained by more comprehensive CDCC calculations.

4.6 Comparison of proton scattering with neutron scattering

It is meaningful to compare the proton scattering with neutron scattering on the lithium isotopes. We calculated the differential cross sections and analyzing powers of the neutron scattering at 14 MeV, using the optical potentials obtained from the analysis of proton scattering. The calculated results for ${}^6\text{Li}+n$ and ${}^7\text{Li}+n$ scatterings are shown in Fig. 9, and compared with the experimental data in Fig. 10. The differential cross sections of the elastic scattering of ${}^6\text{Li}$ are reproduced well but those of the inelastic scattering are different in the angular distribution at forward and backward angles. On the other hand, the differential cross sections of the elastic scattering on ${}^7\text{Li}$, which include those of the inelastic scattering leading to the 1st excited state, are also reproduced well, if the Coulomb barrier of about 2 MeV is taken into account. The neutron inelastic scattering indicates similar

difference at forward and backward angles as the proton inelastic scattering. The analyzing powers for the ${}^6\text{Li} + \text{n}$ elastic scattering measured at TUNL[3] are reproduced very well by the calculation based on the present optical potential. As a result, the study on the proton scattering is valuable for modelling of nuclear reactions inclusive of neutron scattering, because much precise analyses are possible for proton scattering.

5. Summary

Differential cross sections, analyzing powers, and double differential cross sections were measured for ${}^{6,7}\text{Li}(p,p')$ scattering at 14.0 MeV. The experimental data of the elastic scattering were excellently reproduced by calculations based on the spherical optical model (SOM) and the coupled channel (CC) method. The DWBA and CC calculations did not predict correctly the analyzing powers in the inelastic channels leading to the 1st and 2nd excited states of ${}^{6,7}\text{Li}$. The three-body breakup process observed in (p,p') continuum spectra was qualitatively explained by DWBA calculations with discretized-continuum states; this method is a simplified one for the complete CDCC calculation. The complete CDCC calculation may provide better fits. This type of study on the proton scattering is valuable for modelling of nuclear reactions and for evaluation of neutron scatterings[17].

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Table 1 Optical potential parameters for ${}^6\text{Li}$.

SOM

	v_0	r_0	a_0	w_s	r_i	a_i	v_{so}	r_{so}	a_{so}	χ_σ^2/N	χ_A^2/N
Present work	57.20	1.227	0.706	19.85	1.386	0.285	12.511	0.608	0.715	0.62	0.79
Bray et al.	41.3	1.050	0.745	2.38	1.923	0.654	2.85	1.020	0.2		
Dave et al.	41.3	1.507	0.663	18.08	1.616	0.196	5.5	1.15	0.5		
Chiba et al.	49.73	1.183	0.686	7.168	1.519	0.479	5.5	1.15	0.5	1.33	

* Exit channel potential for the 1st excited state (2.185 MeV, 3^+).

Present work	25	5	3	12	1	2	22	4	3		
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CC

	v_0	r_0	a_0	w_s	r_i	a_i	v_{so}	r_{so}	a_{so}	β^2	χ_σ^2/N	χ_A^2/N
Present work	67.25	0.947	0.526	2.865	1.089	0.925	12.81	0.442	1.492	1.26	16.3	24.8
Chiba et al.	47.06	1.243	0.594	9.811	1.286	0.240	5.5	1.15	0.5	1.099	3.52	

Table 2 Optical potential parameters for ${}^7\text{Li}$.

SOM

	v_0	r_0	a_0	w_s	r_i	a_i	v_{so}	r_{so}	a_{so}	χ_σ^2/N	χ_A^2/N
Present work	50.30	1.288	0.640	9.463	1.186	0.513	9.249	1.188	0.507	1.76	14.70
Dave et al.	37.73	1.504	0.565	13.80	1.512	0.185	5.5	1.15	0.5		
Chiba et al.	61.26	1.048	0.751	7.666	1.638	0.294	5.5	1.15	0.5	1.73	

* Exit channel potential for the 1st excited state (0.478 MeV, $1/2^-$).

Present work	40	1.0	0.7	8	1.5	0.5	0	-	-		
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* Exit channel potential for the 2nd excited state (4.63 MeV, $7/2^-$).

Present work	35	3.5	2.0	8	2	1.5	10	4.0	2.0		
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CC

	v_0	r_0	a_0	w_s	r_i	a_i	v_{so}	r_{so}	a_{so}	β^2	χ_σ^2/N	χ_A^2/N
Present work	52.23	1.127	0.583	2.529	1.571	0.732	6.565	1.141	0.432	0.961	26.96	2.81
Chiba et al.	52.01	1.187	0.636	11.14	1.434	0.133	5.5	1.15	0.5	0.956	3.9	

Table 3 Deformation parameter β^2 deduced by DWBA analysis.

	β^2 parameter		
	${}^6\text{Li}$ (2.185 MeV, 3 ⁺)	${}^7\text{Li}$ (0.478 MeV, 1/2 ⁻)	${}^7\text{Li}$ (4.63 MeV, 7/2 ⁻)
Present work (p,p')			
standard case	1.4	1.3	1.1
exit-channel modified case	2.1	1.4	1.7
Chiba et al. (n,n')	1.1	0.96	1.1
Matsuki et al. (d,d')	1.1	1.4	1.2
Matsuki et al. (α,α')	1.6	1.0	1.4
Lauritzen et al. B(E2)	1.4	1.4	1.2

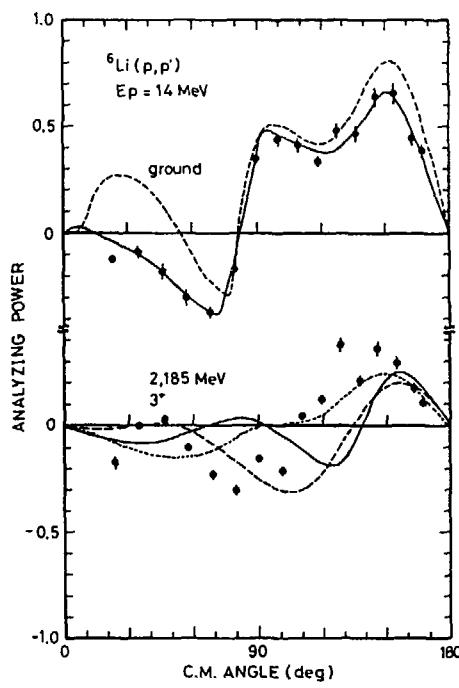


Fig.1 Differential cross sections and analyzing powers for the ${}^6\text{Li}(p,p')$ scattering at 14.0 MeV. Errors associated to the data points are smaller than their symbols. Solid lines are results of the SOM calculation for the elastic scattering and the DWBA calculation for the inelastic scattering, and dashed lines indicate coupled channel (CC) calculations. Dotted lines for the inelastic scattering is of the DWBA calculation by using the microscopic cluster model form factors.

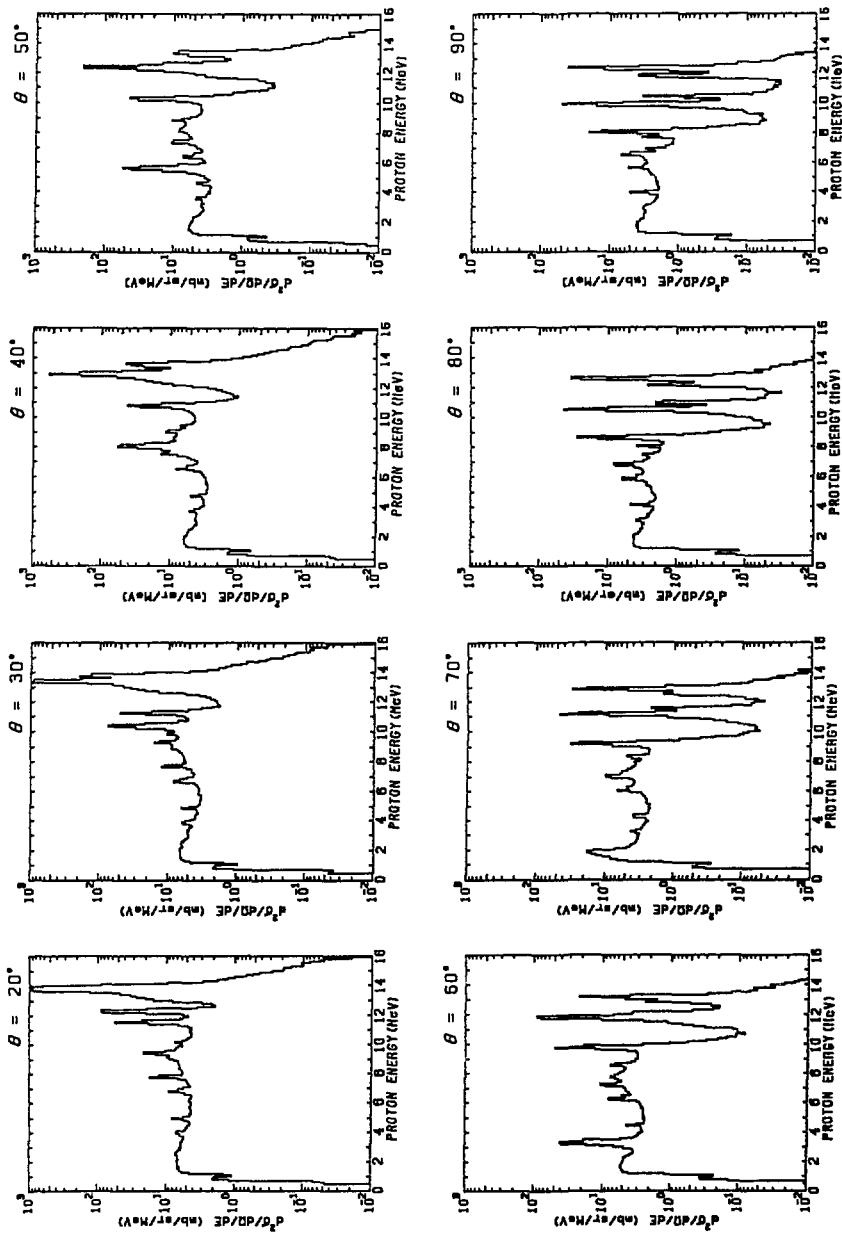


Fig.2 Double differential cross sections (DDX) of the ${}^6\text{Li}(p,p)$ scattering at 14.0 MeV. The contaminated peaks of the scattering from ${}^7\text{Li}$, ${}^1\text{H}$, ${}^{12}\text{C}$, and ${}^{16}\text{O}$ are not corrected.

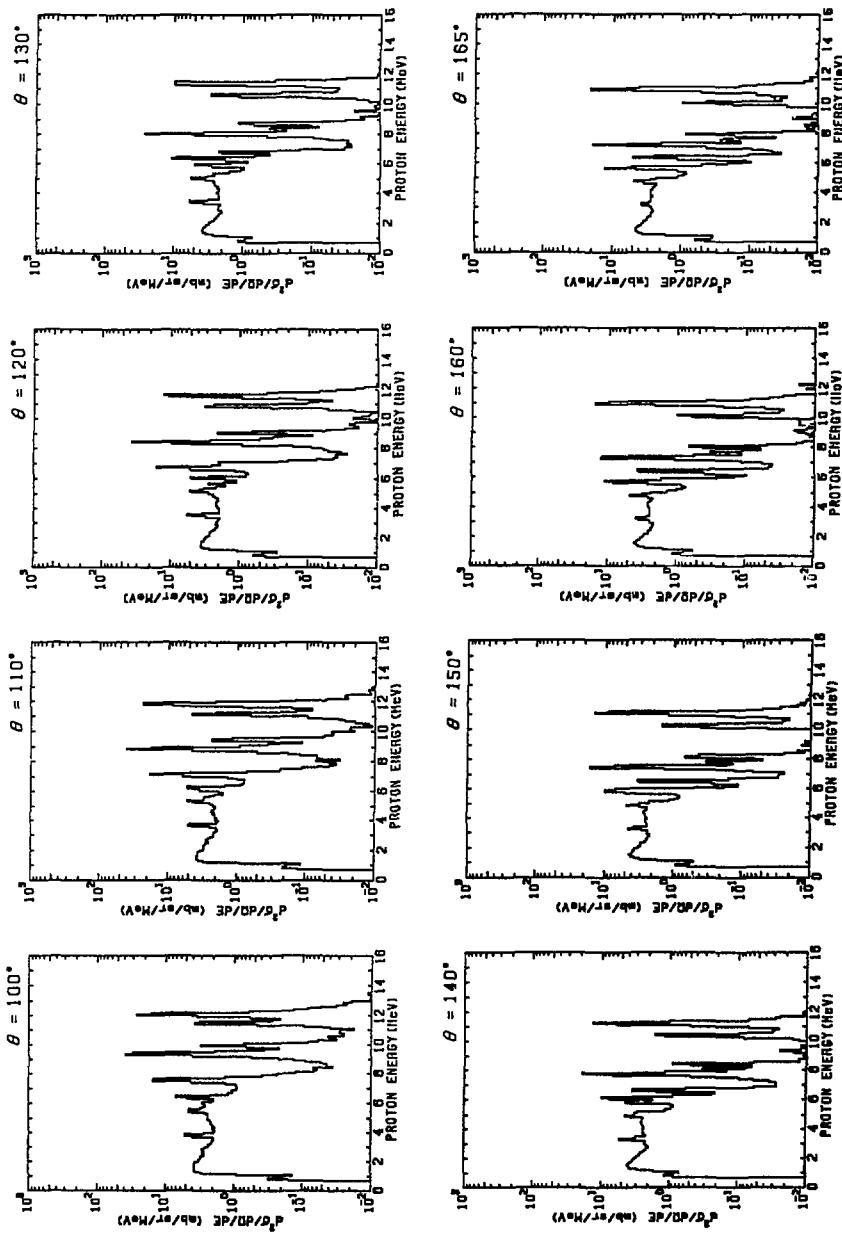


Fig.2 Continued.

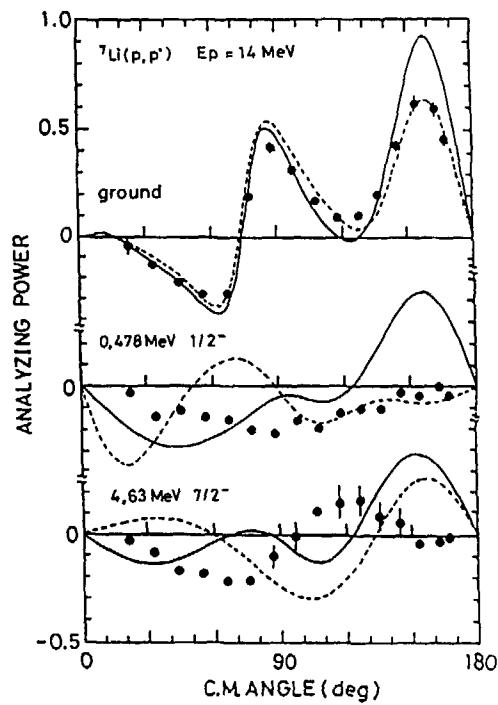
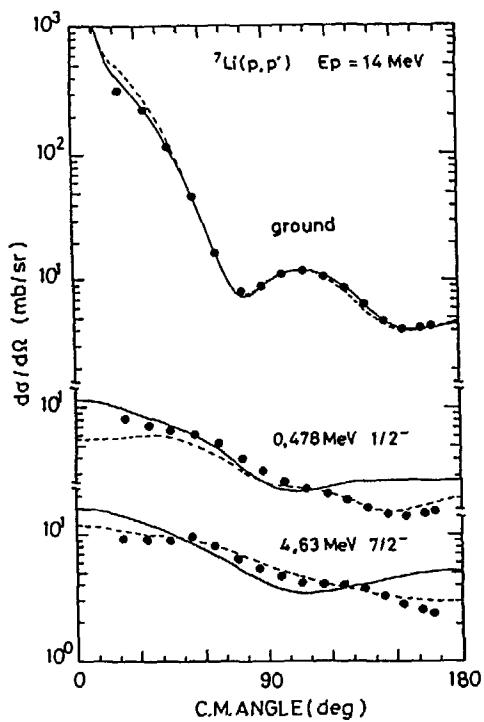


Fig.3 Differential cross sections and analyzing powers for the ${}^7\text{Li}(p,p')$ scattering at 14.0 MeV. Errors associated to the data points are smaller than their symbols. Solid lines are results of the SOM calculation for the elastic scattering and the DWBA calculation for the inelastic scattering, and dashed lines indicate coupled channel (CC) calculations.

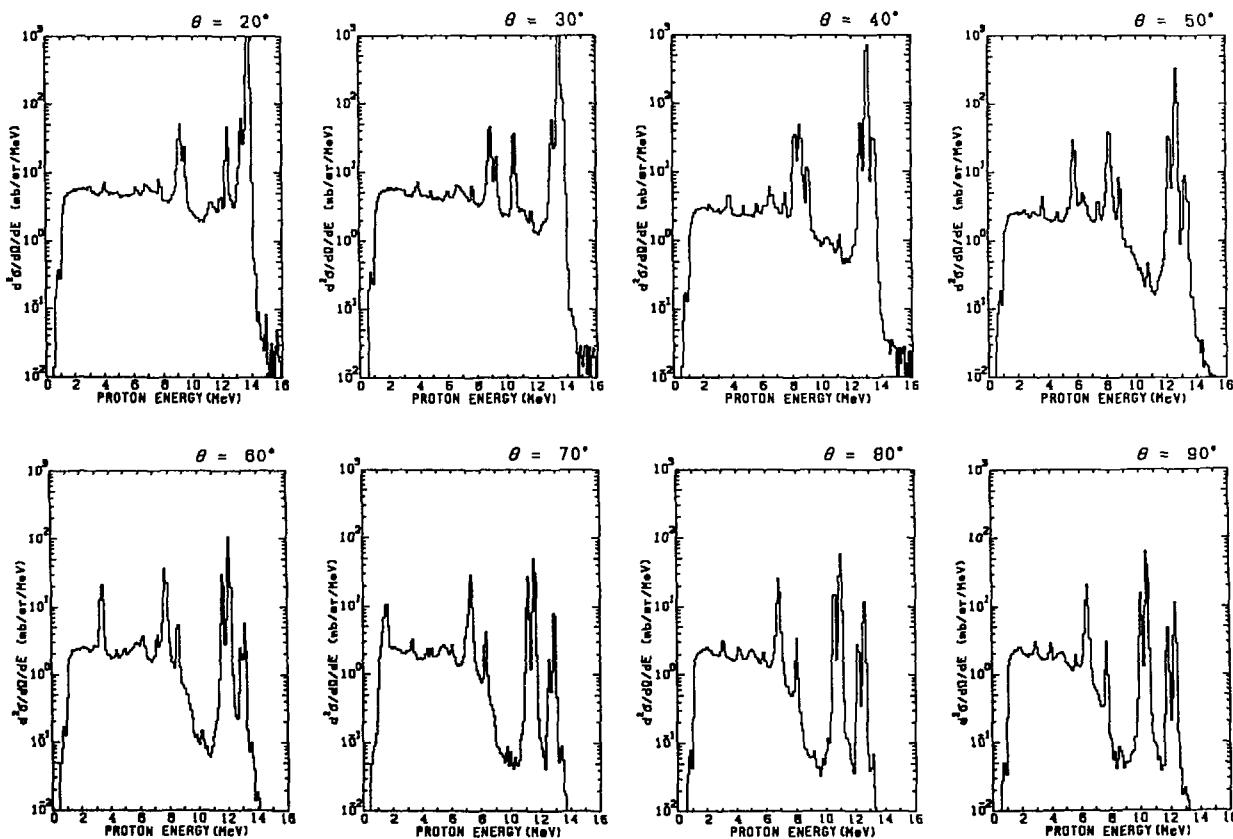


Fig.4 Double differential cross sections (DDX) of the ${}^7\text{Li}(p,p')$ scattering at 14.0 MeV. The contaminated peaks of the scattering from ${}^1\text{H}$, ${}^{12}\text{C}$, and ${}^{16}\text{O}$ are not corrected.

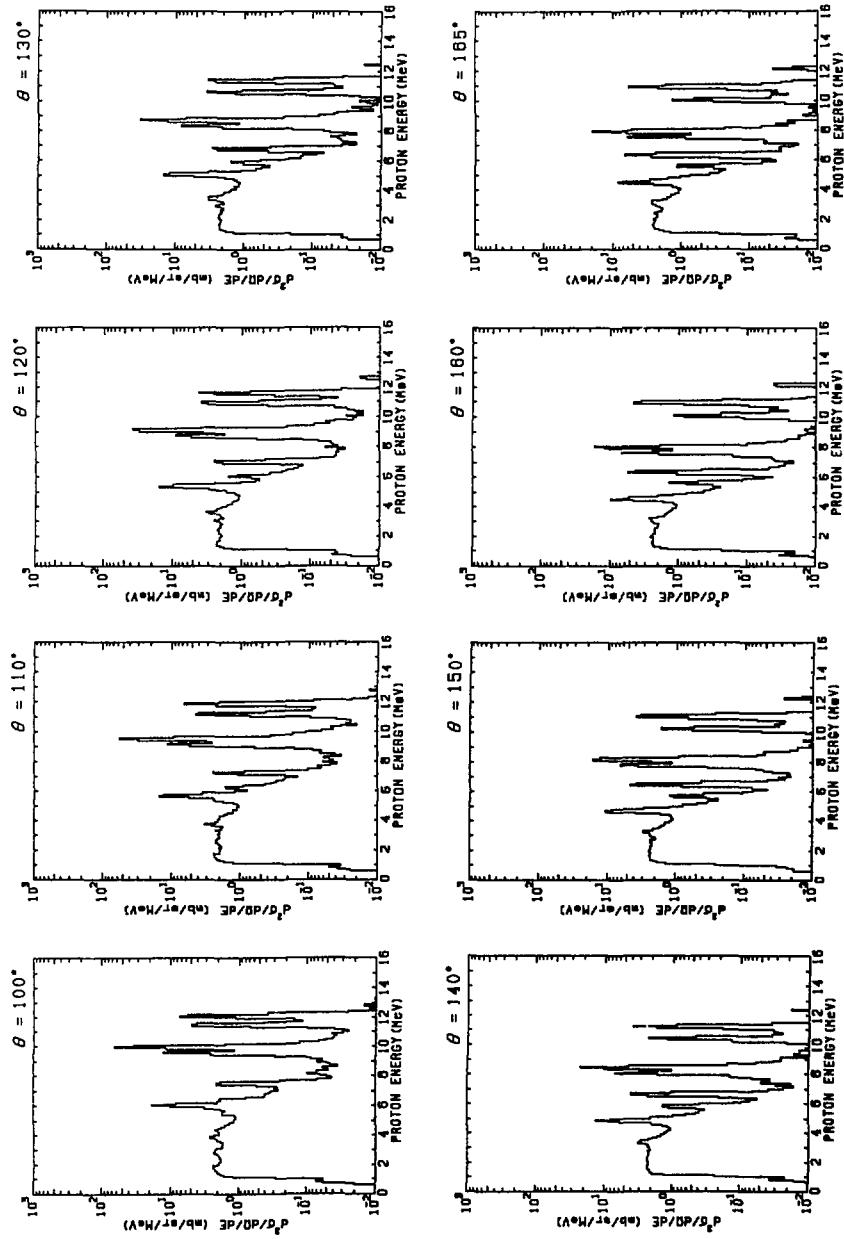


Fig.4 Continued.

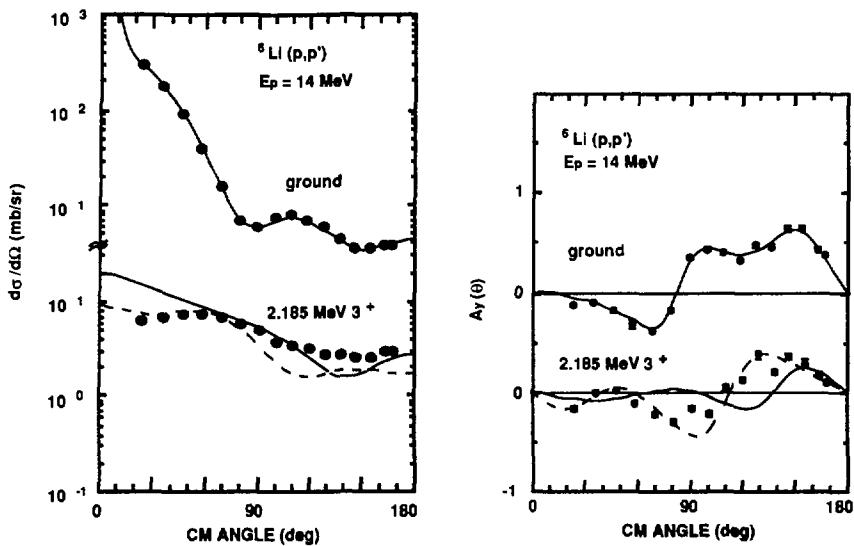


Fig.5 Effect of changing the optical potential for the exit channel of the ${}^6\text{Li}(p,p')$ scattering. Solid lines indicate the result of the SOM and DWBA calculations. Dashed lines indicate the result of the DWBA calculation with a modified optical potential for the exit channel. The potential parameters for the 1st excited state of ${}^6\text{Li}$ is given in Table 1.

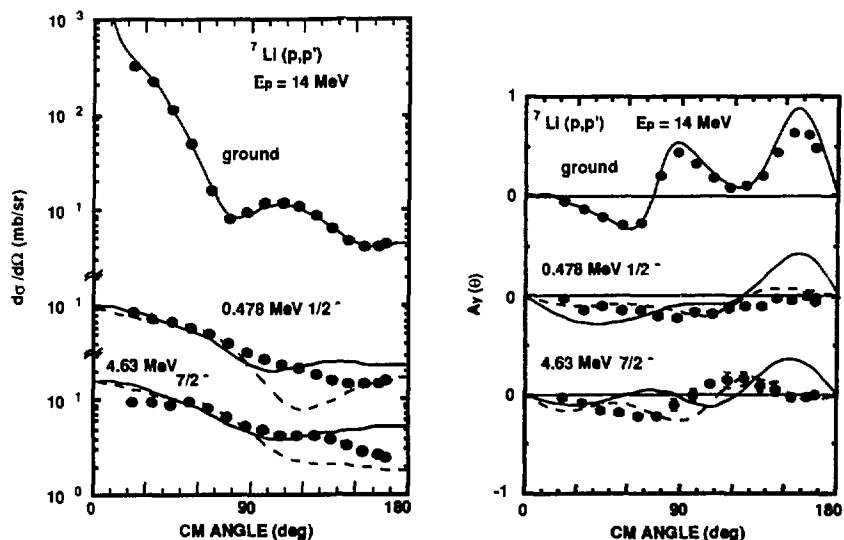


Fig.6 Effect of changing the optical potential for the exit channel of the ${}^7\text{Li}(p,p')$ scattering. Solid and dashed lines are similar as in Fig.5. The potential parameters for the 1st and 2nd excited states of ${}^7\text{Li}$ is given in Table 2.

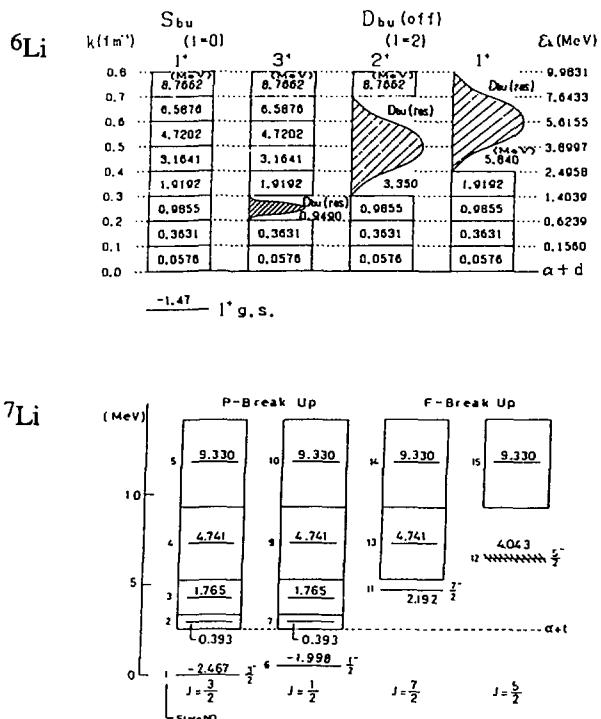


Fig. 7 Resonant and non-resonant (discretized-continuum) states taken into account in the DWBA calculation of the proton continuum spectra.

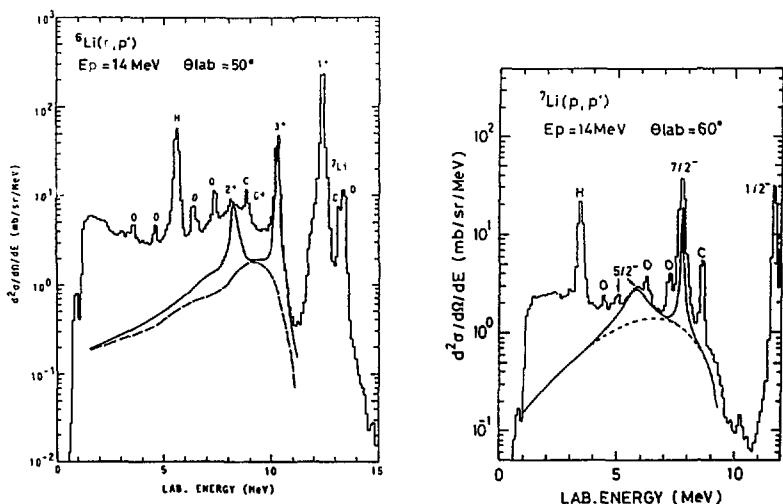


Fig.8 Comparisons of calculated and measured proton continuum spectra. The calculated spectra are of the DWBA calculation using the form factors for the resonant and discretized-continuum states. The form factors are derived from the microscopic cluster model.

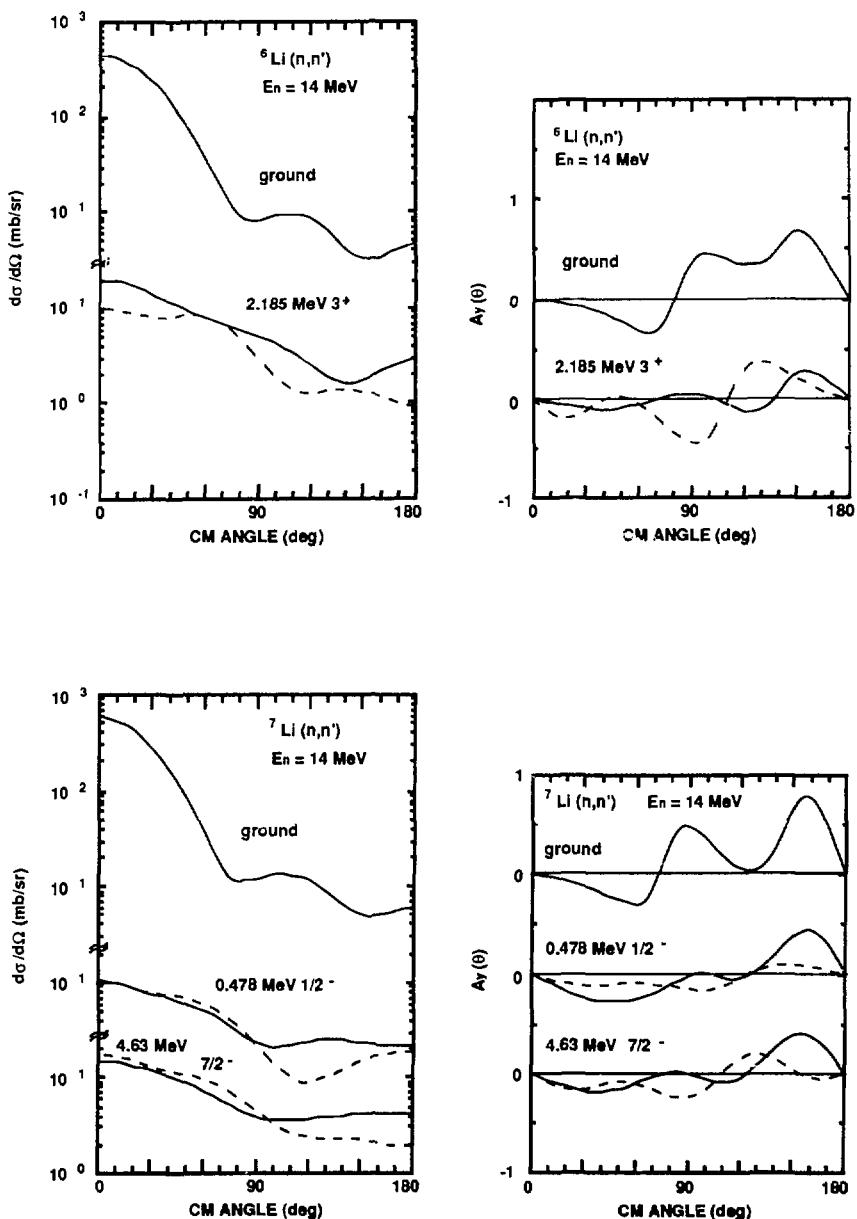


Fig.9 Theoretical differential cross sections and analyzing powers of (n,n') scattering obtained by means of the potential parameters for the proton scattering.

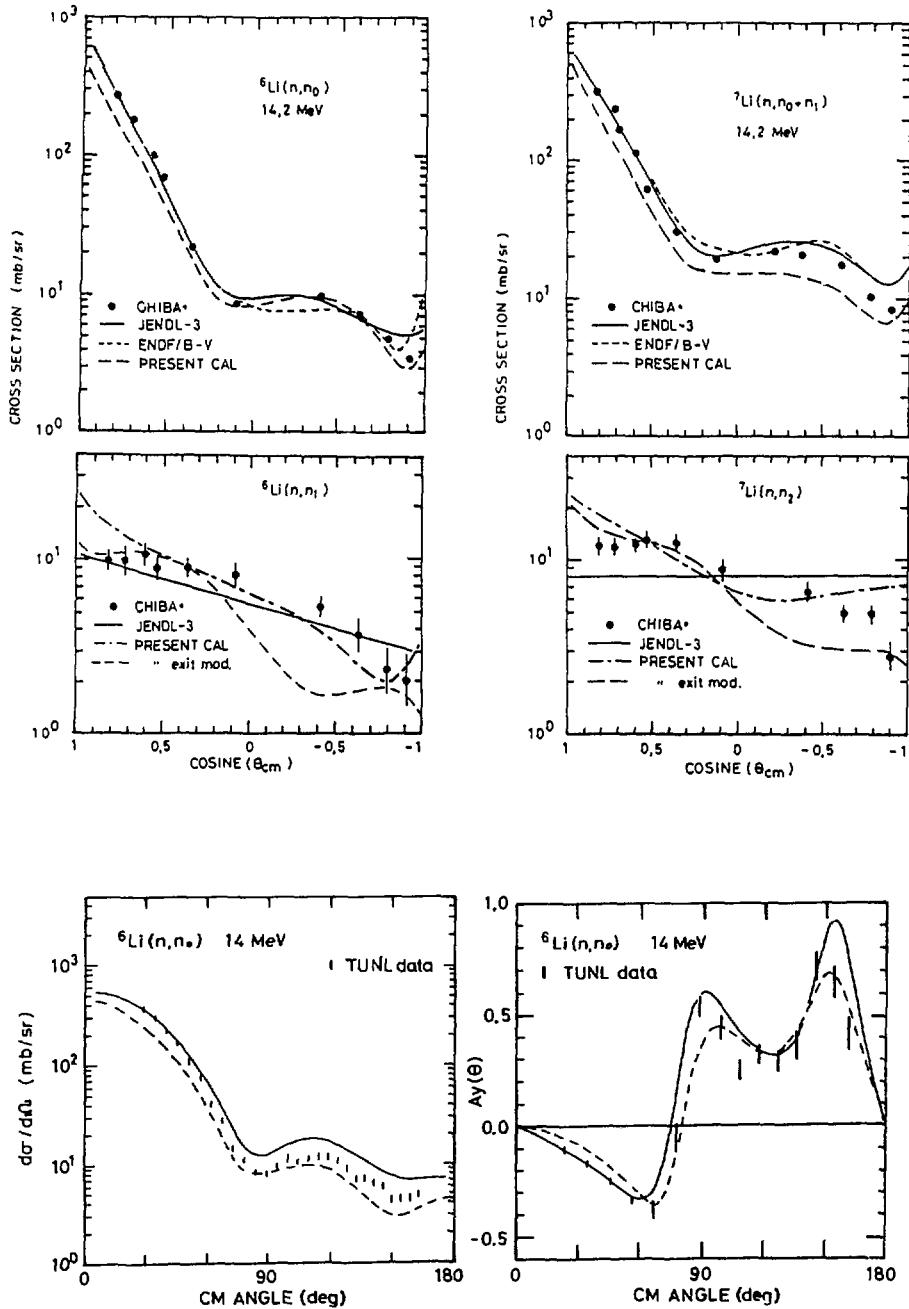


Fig.10 Comparisons of the calculation, based on the potential parameters from the proton scattering, with the (n,n') scattering experimental data.

Appendix 1 Differential cross sections and analyzing powers for the ${}^6\text{Li}(p,p_0)$, ${}^6\text{Li}(p,p_1)$, and ${}^6\text{Li}(p,p_2)$ scattering at 14 MeV.

${}^6\text{Li}$ ground (1^+)				${}^6\text{Li}$ 1st (2.185 MeV, 3^+)				${}^6\text{Li}$ 2nd (3.562 MeV, 0^+)		
θ cm (deg)	$d\sigma/d\Omega$ (mb/sr)	θ cm (deg)	$A(\theta)$	θ cm (deg)	$d\sigma/d\Omega$ (mb/sr)	θ cm (deg)	$A(\theta)$	θ cm (deg)	$d\sigma/d\Omega$ (mb/sr)	
23.75	311.5 \pm 6.3	22.97	-0.125 \pm 0.021	24.10	6.22 \pm 0.13	23.31	-0.172 \pm 0.028	24.39	0.381 \pm 0.082	
35.26	178.1 \pm 3.6	34.43	-0.088 \pm 0.031	35.78	6.88 \pm 0.16	34.94	0.002 \pm 0.015	36.20	0.318 \pm 0.068	
46.63	89.6 \pm 1.8	45.78	-0.181 \pm 0.039	47.30	7.57 \pm 0.15	46.43	0.032 \pm 0.016	47.84	0.240 \pm 0.051	
57.82	40.7 \pm 0.82	56.97	-0.305 \pm 0.062	58.61	7.49 \pm 0.15	57.75	-0.101 \pm 0.014	59.26	0.176 \pm 0.039	
68.78	16.1 \pm 0.33	67.95	-0.369 \pm 0.027	69.67	6.91 \pm 0.14	68.84	-0.228 \pm 0.021	70.41	0.148 \pm 0.035	
79.48	7.22 \pm 0.15	78.71	-0.170 \pm 0.016	80.45	5.80 \pm 0.12	79.68	-0.302 \pm 0.025	81.25	0.142 \pm 0.033	
89.91	6.21 \pm 0.13	89.21	0.351 \pm 0.026	90.93	4.89 \pm 0.10	90.23	-0.155 \pm 0.018	91.76	0.169 \pm 0.037	
100.05	7.33 \pm 0.15	99.44	0.439 \pm 0.032	101.08	3.84 \pm 0.081	100.47	-0.211 \pm 0.021	101.93	0.222 \pm 0.046	
109.11	7.90 \pm 0.16	108.57	0.411 \pm 0.032	110.13	3.39 \pm 0.072	109.59	0.046 \pm 0.016	110.96	—	
118.68	7.15 \pm 0.15	118.11	0.334 \pm 0.027	119.65	3.14 \pm 0.068	119.08	0.123 \pm 0.021	120.45	0.310 \pm 0.064	
127.98	5.91 \pm 0.12	127.39	0.479 \pm 0.037	128.87	2.77 \pm 0.060	128.29	0.374 \pm 0.034	129.61	0.265 \pm 0.055	
137.02	4.52 \pm 0.094	136.43	0.465 \pm 0.036	137.81	2.71 \pm 0.059	137.23	0.211 \pm 0.023	138.46	0.234 \pm 0.049	
145.83	3.62 \pm 0.077	145.27	0.636 \pm 0.049	146.50	2.58 \pm 0.060	145.94	0.359 \pm 0.032	147.04	0.219 \pm 0.047	
154.46	3.46 \pm 0.074	153.94	0.653 \pm 0.050	154.98	2.50 \pm 0.056	154.46	0.293 \pm 0.029			
162.95	3.73 \pm 0.079	162.47	0.444 \pm 0.035	163.30	2.85 \pm 0.064	162.84	0.173 \pm 0.023			
167.15	3.95 \pm 0.083	166.70	0.383 \pm 0.031	167.42	2.88 \pm 0.064	166.98	0.106 \pm 0.019			

Appendix 2 Double differential cross sections for the $\delta\text{Li}(p,p)$ scattering

LAB. ANGLE = 20 deg

444 511 (P-P') DDX (PPPP) 844 ED = 14 NOV LAB ANGLE = 30 DEG

***** G1(p,p') DDX (error) *** Ep = 14 MeV LAB. ANGLE = 40 deg [POL = NON]

energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00	(0.00E+00)								
1.0 /	4.35E+01	(2.91E+01)	(1.21E+00)	(1.11E+01)	(4.01E+00)	(1.21E+01)	(5.27E+00)	(8.59E+01)	(5.96E+00)	(1.35E+00)
2.0 /	5.39E+00	(6.10E+01)	(5.45E+00)	(6.37E+01)	(5.08E+00)	(1.16E+01)	(5.21E+00)	(1.42E+01)	(5.38E+00)	(1.27E+01)
3.0 /	4.04E+00	(7.73E+02)	(4.35E+00)	(7.32E+00)	(6.27E+00)	(1.21E+01)	(5.74E+00)	(8.21E+01)	(4.08E+00)	(1.04E+01)
4.0 /	3.44E+00	(6.45E+02)	(3.23E+00)	(7.32E+00)	(6.44E+02)	(1.20E+00)	(6.74E+02)	(3.21E+00)	(6.67E+02)	(3.22E+00)
5.0 /	2.70E+00	(6.30E+02)	(2.99E+00)	(6.32E+02)	(3.00E+00)	(6.25E+02)	(2.78E+00)	(6.20E+02)	(2.50E+00)	(6.38E+02)
6.0 /	3.17E+00	(6.64E+02)	(3.32E+00)	(6.32E+02)	(3.40E+00)	(6.25E+02)	(3.47E+00)	(6.35E+02)	(3.01E+00)	(6.48E+02)
7.0 /	4.02E+00	(7.31E+02)	(4.55E+00)	(7.33E+02)	(5.05E+00)	(6.38E+02)	(5.05E+00)	(7.38E+02)	(4.10E+00)	(7.35E+02)
8.0 /	5.12E+01	(2.92E+01)	(5.21E+01)	(2.10E+01)	(1.81E+01)	(1.74E+01)	(1.59E+01)	(1.49E+01)	(1.35E+01)	(1.24E+01)
9.0 /	1.17E+01	(1.27E+01)	(1.07E+01)	(1.34E+02)	(1.20E+01)	(1.24E+02)	(1.20E+01)	(1.24E+02)	(1.09E+01)	(1.04E+01)
10.0 /	6.38E+00	(7.70E+02)	(4.50E+00)	(7.44E+00)	(6.10E+02)	(4.94E+00)	(8.28E+02)	(5.33E+00)	(6.56E+02)	(6.28E+00)
11.0 /	4.33E+00	(7.74E+02)	(2.64E+00)	(5.44E+02)	(4.05E+00)	(5.54E+02)	(2.27E+00)	(5.15E+02)	(3.35E+00)	(4.31E+02)
12.0 /	2.85E+00	(6.79E+02)	(4.79E+00)	(6.14E+02)	(4.64E+00)	(6.14E+02)	(4.62E+00)	(6.15E+02)	(3.48E+00)	(4.54E+02)
13.0 /	2.18E+02	(5.36E+02)	(5.06E+01)	(5.65E+01)	(5.06E+01)	(5.15E+01)				
14.0 /	9.46E+01	(3.34E+02)	(4.75E+01)	(3.04E+02)	(5.54E+01)	(3.34E+02)	(2.45E+01)	(3.54E+01)	(2.22E+01)	(4.24E+02)
15.0 /	9.12E+02	(1.35E+02)	(8.37E+02)	(1.09E+02)	(5.35E+02)	(1.35E+02)	(4.08E+02)	(7.73E+02)	(7.12E+02)	(5.41E+03)

***** G1(p,p') DDX (error) *** Ep = 14 MeV LAB. ANGLE = 50 deg [POL = NON]

energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
1.0 /	0.00E+00	(0.00E+00)								
2.0 /	5.35E+00	(1.13E+00)	(1.13E+01)	(4.21E+00)	(1.13E+02)	(5.04E+00)	(1.05E+02)	(5.33E+00)	(8.24E+02)	(4.41E+00)
3.0 /	3.99E+00	(7.75E+02)	(3.04E+00)	(7.72E+02)	(4.05E+00)	(7.52E+02)	(4.05E+00)	(7.29E+02)	(3.96E+00)	(7.07E+02)
4.0 /	3.08E+00	(6.44E+02)	(2.12E+00)	(6.42E+02)	(3.06E+00)	(2.17E+02)	(3.02E+00)	(2.10E+02)	(3.45E+00)	(6.48E+02)
5.0 /	3.10E+00	(6.37E+02)	(2.93E+00)	(6.35E+02)	(3.07E+00)	(2.77E+00)	(6.20E+02)	(2.93E+00)	(6.04E+00)	(6.40E+02)
6.0 /	3.38E+00	(6.14E+02)	(4.06E+00)	(6.12E+02)	(3.37E+00)	(9.20E+02)	(3.37E+00)	(9.20E+02)	(4.04E+00)	(1.41E+01)
7.0 /	4.56E+00	(7.08E+02)	(5.07E+00)	(6.15E+02)	(4.06E+00)	(9.17E+02)	(4.06E+00)	(9.17E+02)	(5.15E+00)	(7.15E+02)
8.0 /	7.10E+00	(9.06E+02)	(6.36E+00)	(6.44E+01)	(4.12E+00)	(1.01E+01)	(1.00E+01)	(1.00E+01)	(5.21E+00)	(9.01E+02)
9.0 /	5.13E+00	(8.04E+02)	(4.95E+00)	(7.14E+02)	(4.95E+00)	(9.17E+00)	(9.85E+00)	(9.50E+00)	(6.48E+00)	(7.45E+00)
10.0 /	5.25E+00	(8.54E+02)	(9.06E+00)	(7.39E+01)	(4.06E+00)	(7.39E+00)	(7.39E+00)	(7.21E+02)	(4.01E+00)	(7.20E+02)
11.0 /	5.54E+01	(7.97E+02)	(5.07E+01)	(1.15E+01)	(5.32E+01)	(1.20E+01)	(9.11E+00)	(1.15E+01)	(5.19E+01)	(5.41E+02)
12.0 /	7.27E+00	(7.93E+02)	(5.07E+01)	(1.15E+01)	(5.32E+01)	(1.20E+01)	(9.11E+00)	(1.15E+01)	(5.19E+01)	(5.41E+02)
13.0 /	1.01E+01	(7.94E+02)	(5.07E+01)	(1.15E+01)	(5.32E+01)	(1.20E+01)	(9.11E+00)	(1.15E+01)	(5.19E+01)	(5.41E+02)
14.0 /	1.41E+01	(1.17E+02)	(7.94E+02)	(1.04E+02)						

GLi(p,p') DDX (error) # Ep = 14 MeV LAB. ANGLE = 60 deg [POL = NON]										
energy/	D.D.	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00	(0.00E+00)	1.07E-02	(3.70E-03)						
1.0 /	2.24E-01	(1.49E-02)	1.19E+00	(3.90E-02)	4.13E+00	(7.25E-02)	4.85E+00	(7.84E-02)	4.99E+00	(7.98E-02)
2.0 /	4.06E+00	(7.88E-02)	4.06E+00	(7.82E-02)	4.14E+00	(7.19E-02)	4.33E+00	(7.43E-02)	3.87E+00	(7.62E-02)
3.0 /	6.84E+00	(9.54E-02)	1.72E+01	(1.52E-01)	3.92E+01	(2.29E-01)	4.15E+01	(2.35E-01)	1.90E+01	(1.59E-01)
4.0 /	2.57E+00	(5.85E-02)	2.61E+00	(5.89E-02)	2.60E+00	(5.90E-02)	4.41E+00	(7.64E-02)	3.12E+00	(6.45E-02)
5.0 /	2.38E+00	(5.63E-02)	2.32E+00	(5.80E-02)	2.45E+00	(5.72E-02)	2.40E+00	(5.75E-02)	2.54E+00	(5.81E-02)
6.0 /	3.07E+00	(6.40E-02)	3.10E+00	(6.50E-02)	7.93E+00	(1.05E-01)	4.43E+00	(7.40E-02)	5.15E+00	(8.20E-02)
7.0 /	4.90E+00	(8.00E-02)	9.97E+01	(1.09E-01)	1.05E+01	(1.10E-01)	6.95E+00	(8.10E-02)	5.25E+00	(8.36E-02)
8.0 /	5.46E+00	(8.44E-02)	5.00E+00	(8.16E-02)	4.71E+00	(7.97E-02)	4.56E+00	(7.40E-02)	5.00E+00	(8.16E-01)
9.0 /	3.01E+00	(6.34E-02)	3.09E+00	(6.41E-02)	2.99E+00	(6.31E-02)	3.06E+00	(6.38E-02)	3.24E+00	(6.57E-02)
10.0 /	1.04E+00	(3.71E-02)	5.54E-01	(2.74E-02)	3.04E-01	(2.01E-02)	2.04E-01	(1.65E-02)	1.51E-01	(1.42E-02)
11.0 /	1.75E-01	(1.29E-02)	3.00E-01	(2.03E-02)	4.61E-01	(2.40E-02)	6.65E-01	(2.90E-02)	1.11E+00	(3.85E-02)
12.0 /	3.77E+00	(7.09E-02)	3.50E+00	(6.91E-02)	4.90E-01	(2.54E-02)	2.47E-01	(1.41E-02)	2.02E-01	(1.64E-02)
13.0 /	4.72E+00	(7.93E-02)	2.25E+01	(1.33E-01)	4.00E+00	(7.30E-02)	2.92E-01	(1.97E-02)	1.33E-01	(1.33E-02)
14.0 /	2.21E-02	(5.43E-03)	1.58E-02	(4.59E-03)	1.30E-02	(4.29E-03)	1.06E-02	(3.75E-03)		

SLi(p,p') DDX (error) # Ep = 14 MeV LAB. ANGLE = 70 deg [POL = NON]										
energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00	(0.00E+00)	9.56E-03	(3.49E-03)						
1.0 /	2.76E-01	(1.07E-02)	1.36E+00	(4.16E-02)	4.57E+00	(7.63E-02)	6.47E+00	(9.08E-02)	8.25E+00	(1.02E-01)
2.0 /	7.16E+00	(9.55E-02)	4.73E+00	(7.76E-02)	4.17E+00	(7.29E-02)	3.92E+00	(7.07E-02)	3.60E+00	(6.77E-02)
3.0 /	3.00E+00	(6.39E-02)	3.51E+00	(6.02E-02)	4.06E+00	(7.34E-02)	3.41E+00	(6.73E-02)	2.04E+00	(6.14E-02)
4.0 /	2.43E+00	(5.68E-02)	2.44E+00	(5.59E-02)	3.64E+00	(6.95E-02)	3.76E+00	(7.07E-02)	2.43E+00	(5.47E-02)
5.0 /	2.10E+00	(5.38E-02)	2.39E+00	(5.63E-02)	2.50E+00	(5.77E-02)	2.41E+00	(5.66E-02)	2.32E+00	(5.83E-02)
6.0 /	6.51E+00	(9.50E-02)	4.47E+00	(7.70E-02)	4.74E+00	(7.93E-02)	4.00E+00	(7.29E-02)	3.79E+00	(7.09E-02)
7.0 /	9.73E+00	(1.14E-01)	5.95E+00	(8.89E-02)	5.70E+00	(8.70E-02)	5.53E+00	(8.57E-02)	4.44E+00	(7.85E-02)
8.0 /	3.12E+00	(6.44E-02)	2.91E+00	(6.42E-02)	4.35E+00	(7.41E-02)	4.42E+00	(8.00E-02)	2.64E+00	(5.92E-02)
9.0 /	7.82E+00	(1.02E-01)	3.14E+01	(2.04E-01)	2.59E+01	(1.70E-01)	3.53E+00	(6.84E-02)	8.24E-01	(3.31E-02)
10.0 /	5.59E-02	(8.67E-03)	6.61E-02	(9.37E-03)	6.09E-02	(8.99E-03)	6.61E-02	(9.37E-03)	7.95E-02	(1.03E-02)
11.0 /	8.90E+00	(1.09E-01)	4.51E+01	(2.45E-01)	2.44E+01	(1.80E-01)	1.47E+00	(4.98E-02)	9.22E-01	(3.50E-02)
12.0 /	4.85E-02	(8.02E-03)	6.05E-02	(8.49E-03)	9.10E-02	(1.10E-02)	1.60E-01	(1.46E-02)	8.37E-01	(3.33E-02)
13.0 /	1.33E+00	(4.21E-02)	2.23E-01	(1.12E-02)	1.07E-01	(1.19E-02)	8.19E-02	(1.04E-02)	7.18E-02	(9.77E-03)

GL(1(p,p')) DDX (error) #1 Ep = 14 NeV LAB-ANGLE = 80 deg										(POL = NON)	
energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	
0.0 / 0.00E+00	{ 0.00E+00 }										
1.0 / 1.32E-01	{ 1.32E-01 }										
2.0 / 4.21E-02	{ 7.21E-02 }	{ 1.72E-02 }									
3.0 / 3.58E-02	{ 6.39E-02 }	{ 1.35E-02 }									
4.0 / 3.00E-02	{ 6.30E-02 }	{ 1.30E-02 }									
5.0 / 2.60E-02	{ 5.31E-02 }	{ 1.26E-02 }									
6.0 / 2.31E-02	{ 5.11E-02 }	{ 1.23E-02 }									
7.0 / 2.07E-02	{ 4.94E-02 }	{ 1.20E-02 }									
8.0 / 1.86E-02	{ 4.74E-02 }	{ 1.18E-02 }									
9.0 / 1.66E-02	{ 4.54E-02 }	{ 1.16E-02 }									
10.0 / 1.46E-02	{ 1.16E-02 }										
11.0 / 1.26E-02	{ 1.14E-02 }										
12.0 / 1.06E-02	{ 1.12E-02 }										
13.0 / 8.48E-03	{ 8.76E-03 }	{ 1.12E-02 }									

GL(1(p,p')) DDX (error) #1 Ep = 14 NeV LAB-ANGLE = 90 deg										[POOL = NON]	
energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	
0.0 / 0.00E+00	{ 0.00E+00 }										
1.0 / 1.30E-01	{ 1.30E-01 }										
2.0 / 3.25E-01	{ 6.34E-02 }	{ 1.32E-01 }									
3.0 / 2.95E-01	{ 6.15E-02 }	{ 1.30E-01 }									
4.0 / 2.65E-01	{ 6.02E-02 }	{ 1.28E-01 }									
5.0 / 2.36E-01	{ 5.89E-02 }	{ 1.26E-01 }									
6.0 / 2.06E-01	{ 5.76E-02 }	{ 1.24E-01 }									
7.0 / 1.80E-01	{ 5.63E-02 }	{ 1.22E-01 }									
8.0 / 1.58E-01	{ 5.50E-02 }	{ 1.20E-01 }									
9.0 / 1.38E-01	{ 5.37E-02 }	{ 1.18E-01 }									
10.0 / 1.20E-01	{ 5.24E-02 }	{ 1.16E-01 }									
11.0 / 1.06E-01	{ 5.11E-02 }	{ 1.14E-01 }									
12.0 / 9.40E-02	{ 5.00E-02 }	{ 1.12E-01 }									
13.0 / 8.25E-02	{ 4.89E-02 }	{ 1.10E-01 }									

GLi(p,p') DDX (error) ##### Ep = 14 MeV LAB. ANGLE = 100 deg [POL = NON]

energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00 (0.00E+00)	1.81E-03 (1.53E-03)	4.64E-03 (2.44E-03)	1.57E-01 (1.42E-02)	3.15E-01 (2.02E-02)	2.41E+01 (1.78E-07)				
1.0 /	1.39E-01 (1.34E-02)	9.07E-01 (3.42E-02)	3.00E+00 (4.72E-02)	3.55E+00 (6.77E-02)	3.72E+00 (6.93E-02)	3.76E+00 (6.96E-02)	3.48E+00 (6.89E-02)	3.68E+00 (6.89E-02)	3.75E+00 (6.96E-02)	3.60E+00 (6.81E-02)
2.0 /	3.20E+00 (6.43E-02)	3.20E+00 (6.42E-02)	3.05E+00 (6.27E-02)	2.92E+00 (6.13E-02)	2.67E+00 (5.87E-02)	2.06E+00 (6.08E-02)	2.70E+00 (5.90E-02)	2.79E+00 (6.00E-02)	2.90E+00 (6.11E-02)	2.65E+00 (5.85E-02)
3.0 /	2.35E+00 (5.58E-02)	2.29E+00 (5.50E-02)	2.18E+00 (5.36E-02)	2.09E+00 (5.26E-02)	2.00E+00 (5.14E-02)	1.93E+00 (5.05E-02)	2.02E+00 (5.16E-02)	4.02E+00 (7.30E-02)	5.04E+00 (6.17E-02)	2.49E+00 (5.96E-02)
4.0 /	1.94E+00 (5.07E-02)	1.86E+00 (4.97E-02)	2.00E+00 (5.14E-02)	1.87E+00 (4.98E-02)	2.00E+00 (5.14E-02)	2.01E+00 (5.16E-02)	2.16E+00 (5.34E-02)	2.15E+00 (5.34E-02)	2.24E+00 (5.46E-02)	2.42E+00 (5.65E-02)
5.0 /	2.37E+00 (5.60E-02)	2.39E+00 (5.62E-02)	2.33E+00 (5.56E-02)	2.51E+00 (5.03E-02)	4.44E+00 (7.67E-02)	4.33E+00 (7.57E-02)	3.09E+00 (6.39E-02)	2.07E+00 (6.16E-02)	2.65E+00 (5.92E-02)	2.73E+00 (6.01E-02)
6.0 /	2.98E+00 (6.19E-02)	2.11E+00 (5.29E-02)	1.97E+00 (5.10E-02)	4.00E+00 (7.96E-02)	6.97E+00 (9.61E-02)	2.22E+00 (5.42E-02)	2.21E+00 (4.06E-02)	1.06E+00 (3.75E-02)	1.02E+00 (3.74E-02)	9.20E+00 (3.50E-02)
7.0 /	6.92E-01 (3.43E-02)	9.09E-01 (3.47E-02)	9.54E-01 (3.55E-02)	1.33E+00 (4.19E-02)	4.18E+00 (7.44E-02)	1.49E+01 (1.40E-01)	1.47E+01 (1.40E-01)	1.35E+00 (4.23E-02)	3.81E-01 (2.25E-02)	2.33E-01 (1.75E-02)
8.0 /	1.28E-01 (1.50E-02)	6.66E-02 (9.39E-03)	6.18E-02 (9.05E-03)	1.01E-02 (9.63E-03)	3.61E-02 (6.91E-03)	4.51E-02 (7.73E-03)	4.52E-02 (7.14E-03)	5.41E-02 (8.59E-03)	9.21E-03 (1.10E-02)	1.95E-01 (1.33E-02)
9.0 /	2.78E-01 (1.74E-02)	5.51E-02 (7.38E-03)	4.12E+00 (7.38E-01)	3.81E+01 (2.24E-01)	3.00E+01 (1.99E-01)	1.90E+00 (5.01E-02)	3.54E-01 (2.17E-02)	2.15E-01 (1.69E-02)	6.44E-01 (2.92E-02)	3.02E+00 (6.32E-02)
10.0 /	2.17E-01 (3.08E-02)	8.09E-02 (1.03E-02)	5.88E-02 (8.02E-03)	3.14E-02 (6.45E-03)	3.10E-02 (7.10E-03)	4.17E-02 (7.43E-03)	2.51E-02 (5.76E-03)	2.46E-02 (5.20E-03)	2.89E-02 (6.18E-03)	2.03E-02 (6.12E-03)
11.0 /	1.77E-02 (4.84E-03)	3.93E-02 (7.21E-03)	9.46E-02 (1.12E-02)	4.54E-01 (2.45E-02)	3.66E+00 (6.96E-02)	3.15E+00 (6.46E-02)	2.76E-01 (1.91E-02)	2.12E-01 (1.48E-02)	5.90E-01 (2.17E-02)	3.40E+00 (6.71E-02)
12.0 /	2.64E+01 (1.07E-01)	1.00E+01 (1.46E-01)	5.99E-01 (2.82E-02)	1.34E-01 (1.34E-02)	8.38E-02 (1.05E-02)	5.38E-02 (8.44E-03)	3.26E-02 (4.57E-03)	2.27E-02 (5.48E-03)	2.58E-02 (5.84E-03)	1.94E-02 (5.07E-03)

GLi(p,p') DDX (error) ##### Ep = 14 MeV LAB. ANGLE = 110 deg [POL = NON]

energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00 (0.00E+00)	5.54E-03 (2.48E-03)	2.98E-03 (1.96E-03)	1.27E-01 (1.20E-02)	2.13E-01 (1.66E-02)	1.80E-01 (1.56E-02)				
1.0 /	1.16E-01 (1.22E-02)	8.95E-01 (3.40E-02)	3.05E+00 (6.20E-02)	3.06E+00 (6.20E-02)	3.04E+00 (7.04E-02)	3.82E+00 (7.02E-02)	3.89E+00 (6.90E-02)	3.62E+00 (6.84E-02)	3.40E+00 (6.89E-02)	3.37E+00 (6.60E-02)
2.0 /	3.05E+00 (6.20E-02)	3.00E+00 (6.23E-02)	1.03E+00 (6.26E-02)	2.04E+00 (6.07E-02)	2.05E+00 (6.07E-02)	2.57E+00 (5.76E-02)	2.00E+00 (6.01E-02)	2.63E+00 (5.58E-02)	2.41E+00 (5.34E-02)	2.21E+00 (5.21E-02)
3.0 /	2.22E+00 (5.34E-02)	2.14E+00 (5.32E-02)	2.01E+00 (5.16E-02)	1.93E+00 (5.05E-02)	1.97E+00 (5.10E-02)	2.45E+00 (5.69E-02)	1.95E+00 (5.08E-02)	2.48E+00 (5.78E-02)	1.95E+00 (5.08E-02)	4.94E+00 (4.94E-02)
4.0 /	2.01E+00 (5.14E-02)	1.97E+00 (5.04E-02)	2.05E+00 (5.21E-02)	2.06E+00 (5.23E-02)	2.22E+00 (5.41E-02)	2.12E+00 (5.30E-02)	2.27E+00 (5.49E-02)	2.14E+00 (5.32E-02)	2.09E+00 (5.26E-02)	2.00E+00 (5.24E-02)
5.0 /	2.27E+00 (5.46E-02)	2.40E+00 (5.73E-02)	3.98E+00 (7.25E-02)	5.22E+00 (8.34E-02)	1.08E+00 (4.63E-02)	2.97E+00 (4.27E-02)	2.57E+00 (5.84E-02)	2.14E+00 (5.33E-02)	1.58E+00 (4.57E-02)	1.85E+00 (4.95E-02)
6.0 /	3.42E+00 (6.72E-02)	3.47E+00 (6.77E-02)	5.21E+00 (8.30E-02)	1.51E+00 (4.74E-02)	8.02E-01 (3.42E-02)	0.04E-01 (3.27E-02)	0.01E-01 (3.26E-02)	7.71E-01 (3.19E-02)	9.87E-01 (3.61E-02)	1.35E+00 (4.23E-02)
7.0 /	6.07E+00 (8.96E-02)	1.07E+01 (1.55E-01)	4.97E+00 (7.94E-02)	7.12E-01 (3.07E-02)	2.37E-01 (1.77E-02)	1.13E-01 (1.27E-02)	6.44E-02 (7.39E-03)	4.65E-02 (7.84E-03)	3.71E-02 (7.00E-03)	4.73E-02 (7.91E-03)
8.0 /	7.17E-02 (9.74E-03)	3.24E-02 (4.55E-03)	6.95E-02 (9.59E-03)	6.93E-02 (9.58E-03)	1.21E-01 (1.24E-02)	1.79E-01 (1.54E-02)	5.12E-01 (2.60E-02)	4.47E+00 (7.69E-02)	4.03E+01 (2.31E-01)	1.74E+01 (1.52E-01)
9.0 /	9.35E-01 (3.52E-02)	3.58E-01 (2.10E-02)	1.14E-01 (1.23E-02)	2.94E-01 (1.37E-02)	2.27E+00 (5.49E-02)	1.19E+00 (3.97E-02)	5.48E-02 (8.67E-02)	5.35E-02 (8.41E-03)	3.99E-02 (7.24E-03)	4.28E-02 (7.52E-03)
10.0 /	1.17E-02 (5.10E-03)	2.30E-02 (5.51E-03)	2.24E-02 (5.45E-03)	1.09E-02 (3.81E-03)	1.49E-02 (4.43E-03)	1.23E-02 (4.04E-03)	1.86E-02 (5.09E-03)	2.39E-02 (6.08E-03)	3.39E-02 (6.70E-03)	9.48E-02 (1.12E-02)
11.0 /	6.32E-01 (2.89E-02)	4.45E+00 (7.67E-02)	2.08E+00 (5.25E-02)	1.41E-01 (1.37E-02)	0.35E-02 (1.05E-02)	1.63E-01 (1.47E-02)	8.41E-01 (3.34E-02)	8.41E+00 (1.06E-01)	2.27E+01 (1.73E-01)	2.00E+00 (5.14E-02)
12.0 /	1.40E-01 (1.36E-02)	5.15E-02 (8.74E-03)	2.40E-02 (5.13E-03)	2.72E-02 (6.09E-03)	2.51E-02 (5.17E-03)	1.15E-02 (3.91E-03)	1.10E-02 (3.95E-03)	1.23E-02 (4.04E-03)		

GLi(p,p') DDX (error) ##### Ep = 14 MeV LAB. ANGLE = 120 deg [POL = NON]

energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00 (0.00E+00)	6.39E-03 (2.85E-03)	0.00E+00 (0.00E+00)	4.10E-01 (2.29E-02)	6.37E-01 (2.85E-02)	4.44E-01 (2.43E-02)				
1.0 /	2.04E-01 (1.90E-02)	1.09E+00 (3.72E-02)	2.70E+00 (5.87E-02)	3.31E+00 (6.51E-02)	3.63E+00 (6.81E-02)	3.66E+00 (6.83E-02)	3.64E+00 (6.82E-02)	3.61E+00 (6.79E-02)	3.11E+00 (6.50E-02)	3.19E+00 (6.39E-02)
2.0 /	3.09E+00 (6.20E-02)	2.83E+00 (6.01E-02)	2.69E+00 (5.86E-02)	2.72E+00 (5.49E-02)	2.50E+00 (5.73E-02)	2.44E+00 (5.58E-02)	2.29E+00 (5.41E-02)	2.15E+00 (5.23E-02)	2.06E+00 (5.13E-02)	2.25E+00 (5.45E-02)
3.0 /	2.16E+00 (5.34E-02)	2.00E+00 (5.25E-02)	2.08E+00 (5.25E-02)	1.93E+00 (5.05E-02)	3.09E+00 (6.40E-02)	5.71E+00 (8.49E-02)	3.48E+00 (6.74E-02)	1.98E+00 (5.12E-02)	2.03E+00 (5.18E-02)	2.01E+00 (5.15E-02)
4.0 /	2.10E+00 (5.27E-02)	2.12E+00 (5.29E-02)	2.21E+00 (5.41E-02)	2.23E+00 (5.42E-02)	2.10E+00 (5.37E-02)	2.06E+00 (5.22E-02)	2.10E+00 (5.27E-02)	2.27E+00 (5.46E-02)	2.50E+00 (5.75E-02)	2.43E+00 (5.67E-02)
5.0 /	2.05E+00 (6.14E-02)	5.30E+00 (8.37E-02)	3.83E+00 (7.12E-02)	3.31E+00 (6.61E-02)	2.70E+00 (5.40E-02)	1.65E+00 (4.67E-02)	2.81E+00 (6.09E-02)	1.74E+00 (4.80E-02)	1.12E+00 (3.85E-02)	1.63E+00 (4.64E-02)
6.0 /	5.21E+00 (8.30E-02)	2.84E+00 (6.12E-02)	8.19E-01 (3.29E-02)	7.49E-01 (3.15E-02)	8.48E-01 (3.35E-02)	1.08E+00 (3.75E-02)	5.14E+00 (8.25E-02)	1.60E+01 (1.45E-01)	2.54E+00 (5.80E-02)	1.91E+00 (5.03E-02)
7.0 /	2.04E+00 (5.20E-02)	1.96E-01 (1.61E-02)	7.52E-02 (9.97E-03)	4.22E-02 (7.48E-03)	3.92E-02 (1.11E-03)	4.08E-02 (7.35E-03)	2.72E-02 (6.00E-03)	3.36E-02 (6.67E-03)	5.08E-02 (8.20E-03)	5.99E-02 (8.90E-03)
8.0 /	8.96E-02 (1.09E-02)	1.67E-01 (1.40E-02)	9.11E-01 (3.47E-02)	9.83E+00 (1.14E-01)	3.59E+01 (2.10E-01)	2.64E+00 (5.91E-02)	5.04E-01 (2.50E-02)	3.27E-01 (2.08E-02)	8.63E-02 (1.07E-02)	2.04E-01 (1.64E-02)
9.0 /	2.00E+00 (5.24E-02)	6.64E-01 (2.96E-02)	5.72E-02 (6.70E-03)	3.07E-02 (6.37E-03)	1.94E-02 (5.06E-03)	2.19E-02 (5.39E-03)	2.60E-02 (5.87E-03)	2.14E-02 (5.34E-03)	9.30E-03 (3.51E-03)	1.32E-02 (4.18E-03)
10.0 /	2.27E-02 (5.49E-03)	1.72E-02 (4.77E-03)	1.33E-02 (4.20E-03)	1.26E-02 (4.08E-03)	3.92E-03 (2.29E-03)	2.21E-02 (5.41E-03)	5.26E-02 (8.34E-03)	3.52E-01 (2.14E-02)	3.24E+00 (6.56E-02)	2.35E+00 (5.50E-02)
11.0 /	1.05E-01 (1.10E-02)	7.40E-02 (9.89E-03)	4.68E-02 (7.07E-03)	1.39E-01 (1.45E-02)	9.36E-01 (1.57E-02)	1.08E+01 (1.20E-01)	1.27E+01 (1.30E-01)	4.16E-01 (2.35E-02)	7.12E-02 (9.71E-03)	4.11E-02 (7.37E-03)
12.0 /	2.13E-02 (5.31E-03)	1.62E-02 (4.62E-03)								

GLi(p,p') DDX (error) #### Ep = 14 MeV LAB. ANGLE = 130 deg [POL = NON]

energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00 (0.00E+00)	1.27E-03 (1.27E-03)	2.54E-03 (1.80E-03)	8.88E-01 (3.34E-02)	1.15E+00 (3.83E-02)	9.02E-01 (3.39E-02)				
1.0 /	7.03E-01 (2.99E-02)	1.50E+00 (4.48E-02)	2.61E+00 (5.74E-02)	3.34E+00 (6.52E-02)	3.68E+00 (6.84E-02)	3.76E+00 (6.92E-02)	3.68E+00 (6.84E-02)	3.53E+00 (6.70E-02)	3.28E+00 (6.46E-02)	3.00E+00 (6.18E-02)
2.0 /	3.00E+00 (6.18E-02)	2.75E+00 (5.91E-02)	2.53E+00 (5.88E-02)	2.44E+00 (5.57E-02)	2.31E+00 (5.42E-02)	2.20E+00 (5.29E-02)	2.12E+00 (5.20E-02)	1.95E+00 (4.98E-02)	7.01E+00 (5.16E-02)	2.24E+00 (5.44E-02)
3.0 /	2.17E+00 (5.36E-02)	2.11E+00 (5.20E-02)	2.03E+00 (5.10E-02)	3.54E+00 (6.44E-02)	5.74E+00 (8.71E-02)	3.15E+00 (6.43E-02)	2.11E+00 (5.20E-02)	2.12E+00 (5.30E-02)	2.15E+00 (5.34E-02)	2.19E+00 (5.38E-02)
4.0 /	2.33E+00 (5.56E-02)	2.20E+00 (5.40E-02)	2.13E+00 (5.30E-02)	2.28E+00 (5.49E-02)	2.20E+00 (5.39E-02)	2.37E+00 (5.59E-02)	2.50E+00 (5.75E-02)	2.57E+00 (5.83E-02)	2.56E+00 (5.82E-02)	3.35E+00 (6.64E-02)
5.0 /	5.46E+00 (8.50E-02)	3.14E+00 (6.44E-02)	2.58E+00 (5.70E-02)	2.74E+00 (6.62E-02)	1.57E+00 (4.55E-02)	1.06E+00 (3.75E-02)	9.57E-01 (3.56E-02)	9.56E-01 (3.55E-02)	2.76E+00 (6.64E-02)	4.94E+00 (8.08E-02)
6.0 /	1.49E+00 (4.44E-02)	8.47E-01 (3.35E-02)	1.70E+00 (4.85E-02)	1.00E+01 (1.19E-01)	9.15E+00 (1.10E-01)	6.73E-01 (2.98E-02)	4.98E-01 (2.32E-02)	2.02E+00 (5.16E-02)	2.22E+00 (5.43E-02)	1.49E-01 (1.41E-02)
7.0 /	3.37E-02 (6.67E-03)	2.62E-02 (5.09E-03)	3.14E-02 (6.45E-03)	2.67E-02 (5.94E-03)	3.15E-02 (6.45E-03)	2.93E-02 (6.21E-03)	4.95E-02 (1.12E-02)	4.47E-01 (2.43E-02)	4.47E-01 (2.43E-02)	4.96E+00 (6.10E-02)
8.0 /	2.67E+01 (1.88E-01)	3.72E+00 (7.02E-02)	2.37E-01 (1.77E-02)	4.14E-01 (2.75E-02)	7.03E-02 (1.02E-02)	1.03E-01 (1.17E-02)	6.80E-01 (3.02E-02)	1.14E+00 (3.09E-02)	6.95E-02 (9.50E-03)	3.16E-02 (5.47E-03)
9.0 /	1.72E-02 (4.70E-03)	1.96E-02 (5.09E-03)	1.10E-02 (3.82E-03)	1.01E-02 (3.66E-03)	1.05E-02 (3.73E-03)	2.36E-02 (5.59E-03)	8.14E-03 (3.28E-03)	7.13E-03 (3.07E-03)	1.21E-02 (4.01E-03)	8.53E-03 (3.36E-03)
10.0 /	3.41E-03 (2.12E-03)	8.14E-03 (3.20E-03)	1.44E-02 (4.39E-03)	2.10E-02 (5.37E-03)	1.15E-01 (1.23E-02)	1.12E+00 (3.85E-02)	2.02E+00 (6.10E-02)	2.12E-01 (1.09E-02)	4.65E-02 (7.04E-03)	4.14E-02 (7.40E-03)
11.0 /	3.98E-02 (7.25E-03)	1.75E-01 (1.29E-02)	9.02E-01 (3.45E-02)	9.58E+00 (1.13E-01)	3.40E-01 (2.12E-02)	6.14E-02 (9.01E-03)	3.09E-02 (6.39E-03)	1.12E-02 (3.85E-03)		

GLi(p,p') DDX (error) #### Ep = 14 MeV LAB. ANGLE = 140 deg [POL = NON]

energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00 (0.00E+00)	7.53E-03 (1.79E-03)	8.49E-01 (3.32E-02)	1.20E+00 (3.89E-02)	8.49E-01 (3.28E-02)					
1.0 /	7.84E-01 (2.09E-02)	1.65E+00 (4.56E-02)	2.84E+00 (6.09E-02)	3.48E+00 (6.64E-02)	3.83E+00 (6.96E-02)	4.04E+00 (7.04E-02)	3.92E+00 (7.04E-02)	3.63E+00 (6.61E-02)	3.10E+00 (6.34E-02)	
2.0 /	2.98E+00 (6.14E-02)	2.87E+00 (6.05E-02)	2.70E+00 (5.85E-02)	2.58E+00 (5.71E-02)	2.36E+00 (5.46E-02)	2.23E+00 (5.32E-02)	2.15E+00 (5.22E-02)	1.96E+00 (4.99E-02)	2.04E+00 (5.21E-02)	2.21E+00 (5.40E-02)
3.0 /	2.30E+00 (5.51E-02)	2.22E+00 (5.42E-02)	3.44E+00 (6.74E-02)	5.27E+00 (8.34E-02)	3.89E+00 (6.39E-02)	2.19E+00 (5.37E-02)	2.31E+00 (5.55E-02)	2.41E+00 (5.64E-02)	2.34E+00 (5.61E-02)	2.39E+00 (5.62E-02)
4.0 /	2.29E+00 (5.59E-02)	2.37E+00 (5.59E-02)	2.40E+00 (5.63E-02)	2.53E+00 (5.78E-02)	2.59E+00 (5.84E-02)	2.45E+00 (5.69E-02)	2.49E+00 (5.73E-02)	2.43E+00 (5.66E-02)	3.61E+00 (6.90E-02)	4.35E+00 (7.58E-02)
5.0 /	3.22E+00 (6.52E-02)	2.95E+00 (6.24E-02)	1.10E+00 (3.95E-02)	1.10E-01 (3.81E-02)	9.49E-01 (3.54E-02)	8.63E-01 (3.58E-02)	9.65E-01 (3.57E-02)	3.53E+00 (6.03E-02)	4.36E+00 (7.59E-02)	1.75E+00 (4.01E-02)
6.0 /	7.61E+00 (1.00E-01)	1.02E+01 (1.16E-01)	8.94E-01 (3.43E-02)	2.40E-01 (1.76E-02)	2.14E-01 (1.68E-02)	1.53E+00 (4.50E-02)	3.50E+00 (6.00E-02)	5.71E-01 (2.74E-02)	5.79E-02 (8.74E-03)	2.70E-02 (5.97E-03)
7.0 /	2.74E-02 (6.02E-03)	2.78E-02 (6.05E-03)	3.42E-02 (6.72E-03)	5.99E-02 (8.09E-03)	9.53E-02 (1.12E-02)	4.95E-01 (2.56E-02)	6.84E+00 (9.31E-02)	1.90E+01 (1.58E-01)	1.17E+00 (3.93E-02)	1.47E-01 (1.39E-02)
8.0 /	3.27E-01 (2.00E-02)	8.04E-02 (1.03E-02)	3.30E-02 (9.12E-03)	4.76E-01 (2.51E-02)	9.14E-01 (3.49E-02)	5.96E-02 (8.87E-03)	1.27E-02 (4.09E-03)	1.31E-02 (4.15E-03)	6.92E-03 (3.02E-03)	7.92E-03 (3.23E-03)
9.0 /	5.40E-03 (2.67E-03)	8.59E-03 (3.37E-03)	1.51E-02 (4.47E-03)	2.44E-02 (5.67E-03)	1.21E-02 (3.99E-03)	8.12E-03 (3.28E-03)	1.20E-02 (3.99E-03)	8.01E-03 (3.25E-03)	3.00E-03 (1.99E-03)	8.12E-03 (3.28E-03)
10.0 /	1.29E-02 (4.12E-03)	1.50E-02 (4.57E-03)	8.18E-02 (1.04E-02)	1.10E+00 (3.95E-02)	1.63E+00 (4.62E-02)	9.64E-02 (1.13E-02)	3.18E-02 (6.48E-03)	2.93E-02 (6.21E-03)	2.54E-02 (5.81E-03)	6.92E-02 (3.56E-03)
11.0 /	5.06E-01 (2.50E-02)	5.96E+00 (8.87E-02)	1.36E+01 (1.34E-01)	1.01E+00 (3.65E-02)	6.98E-02 (9.60E-03)	2.83E-02 (6.11E-03)	2.41E-02 (5.64E-03)			

GLi(p,p') DDX (error) #### Ep = 14 MeV LAB. ANGLE = 150 deg [POL = NON]

energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00 (0.00E+00)	2.46E-03 (1.84E-03)	0.00E+00 (0.00E+00)	6.07E-01 (2.77E-02)	8.84E-01 (3.35E-02)	5.61E-01 (2.67E-02)				
1.0 /	4.95E-01 (2.50E-02)	1.64E+00 (4.58E-02)	3.10E+00 (6.26E-02)	3.70E+00 (6.84E-02)	4.06E+00 (7.10E-02)	4.25E+00 (7.33E-02)	4.02E+00 (7.14E-02)	3.79E+00 (6.93E-02)	3.68E+00 (6.63E-02)	3.36E+00 (6.52E-02)
2.0 /	3.13E+00 (6.30E-02)	2.92E+00 (6.08E-02)	2.95E+00 (6.12E-02)	2.65E+00 (5.80E-02)	2.45E+00 (5.57E-02)	2.41E+00 (5.53E-02)	2.37E+00 (5.48E-02)	2.20E+00 (5.28E-02)	2.18E+00 (5.36E-02)	2.40E+00 (5.63E-02)
3.0 /	2.37E+00 (5.59E-02)	2.05E+00 (6.15E-02)	4.47E+00 (7.69E-02)	3.72E+00 (7.81E-02)	2.38E+00 (5.60E-02)	2.42E+00 (5.66E-02)	2.42E+00 (5.65E-02)	2.44E+00 (5.68E-02)	2.49E+00 (5.74E-02)	2.31E+00 (5.40E-02)
4.0 /	2.53E+00 (5.70E-02)	2.51E+00 (5.76E-02)	2.55E+00 (5.80E-02)	2.62E+00 (5.88E-02)	2.62E+00 (5.80E-02)	2.46E+00 (5.70E-02)	2.41E+00 (5.44E-02)	3.13E+00 (6.43E-02)	4.76E+00 (7.93E-02)	3.15E+00 (6.45E-02)
5.0 /	2.27E+00 (5.47E-02)	1.16E+00 (3.91E-02)	9.63E-01 (3.57E-02)	8.53E-01 (3.36E-02)	8.10E-01 (3.27E-02)	9.06E-01 (3.46E-02)	3.62E+00 (6.91E-02)	5.14E+00 (8.24E-02)	1.02E+01 (1.16E-01)	7.10E+00 (9.68E-02)
6.0 /	5.01E-01 (2.57E-02)	1.84E-01 (1.56E-02)	1.13E-01 (1.22E-02)	2.25E-01 (1.91E-02)	3.14E+00 (6.45E-02)	3.56E+00 (6.64E-02)	1.57E-01 (1.44E-02)	3.84E-02 (6.33E-03)	2.98E-02 (6.27E-03)	2.92E-02 (6.20E-03)
7.0 /	2.40E-02 (5.63E-03)	7.04E-02 (9.65E-03)	1.20E-01 (1.30E-02)	1.35E+00 (4.22E-02)	1.65E+01 (1.40E-01)	7.27E+00 (9.00E-02)	1.67E-01 (1.40E-02)	1.37E-01 (1.34E-02)	3.33E-01 (2.10E-02)	4.90E-02 (8.11E-03)
8.0 /	6.75E-02 (9.44E-03)	6.09E-01 (3.07E-02)	4.24E-01 (2.37E-02)	2.46E-02 (5.70E-03)	1.25E-02 (4.05E-03)	1.57E-02 (4.55E-03)	5.40E-03 (2.69E-03)	5.40E-03 (2.69E-03)	6.80E-03 (3.00E-03)	1.33E-02 (4.18E-03)
9.0 /	4.30E-03 (2.38E-03)	1.21E-02 (3.99E-03)	8.12E-03 (3.27E-03)	8.12E-03 (3.27E-03)	6.35E-03 (2.90E-03)	8.33E-03 (3.32E-03)	7.01E-03 (3.04E-03)	8.17E-03 (3.20E-03)	5.12E-03 (2.60E-03)	8.40E-03 (3.35E-03)
10.0 /	4.25E-02 (7.49E-03)	4.04E-01 (2.31E-02)	1.47E+00 (4.40E-02)	2.20E-01 (1.74E-02)	2.64E-02 (5.90E-03)	2.58E-02 (5.83E-03)	2.09E-02 (5.25E-03)	4.27E-02 (7.51E-03)	1.30E-01 (1.31E-02)	1.17E+00 (3.94E-02)
11.0 /	1.41E+01 (1.37E-01)	9.05E+00 (1.09E-01)	2.26E-01 (1.73E-02)	5.12E-02 (8.22E-03)	2.77E-02 (6.05E-03)	1.55E-02 (4.53E-03)	1.23E-02 (4.03E-03)	1.39E-02 (4.20E-03)	1.16E-02 (3.91E-03)	

6Li(p,p') DDX (error) #8 Ep = 14 MeV LAB. ANGLE = 160 deg [POL = NON]										
energy	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0	0.00E+00 (0.00E+00)	3.77E-03 (2.18E-03)	1.26E-03 (1.26E-03)	8.86E-01 (3.34E-02)	1.14E+00 (3.78E-02)	7.83E-01 (3.14E-02)				
1.0	5.82E-01 (2.70E-02)	1.57E+00 (4.44E-02)	2.88E+00 (6.02E-02)	3.51E+00 (6.64E-02)	3.81E+00 (6.92E-02)	4.11E+00 (7.18E-02)	3.87E+00 (6.97E-02)	3.46E+00 (6.79E-02)	3.37E+00 (6.51E-02)	3.19E+00 (6.33E-02)
2.0	3.04E+00 (1.18E-02)	2.95E+00 (6.08E-02)	2.62E+00 (5.73E-02)	2.58E+00 (5.70E-02)	2.35E+00 (5.44E-02)	2.42E+00 (5.51E-02)	2.30E+00 (5.37E-02)	2.22E+00 (5.28E-02)	2.16E+00 (5.34E-02)	2.50E+00 (5.75E-02)
3.0	2.56E+00 (5.61E-02)	3.61E+00 (6.90E-02)	3.98E+00 (7.35E-02)	2.79E+00 (6.07E-02)	2.54E+00 (5.79E-02)	2.53E+00 (5.78E-02)	2.50E+00 (5.751E-02)	2.54E+00 (5.79E-02)	2.52E+00 (5.77E-02)	2.61E+00 (5.87E-02)
4.0	2.45E+00 (5.91E-02)	2.72E+00 (5.99E-02)	2.65E+00 (5.91E-02)	2.47E+00 (5.71E-02)	2.35E+00 (5.57E-02)	2.26E+00 (5.47E-02)	2.64E+00 (5.93E-02)	4.96E+00 (8.04E-02)	3.22E+00 (6.52E-02)	2.48E+00 (5.72E-02)
5.0	1.44E+00 (4.36E-02)	1.02E+00 (3.40E-02)	8.48E-01 (3.34E-02)	7.74E-01 (3.29E-02)	8.07E-01 (3.42E-02)	7.73E+00 (6.00E-02)	8.55E+00 (1.04E-01)	1.14E+01 (1.23E-01)	1.73E+00 (4.70E-02)	2.72E-01 (1.90E-02)
6.0	1.49E-01 (1.40E-02)	9.99E-02 (1.15E-02)	4.08E-01 (2.32E-02)	3.52E+00 (6.02E-02)	7.97E-01 (7.07E-02)	3.32E-01 (2.09E-02)	4.73E-02 (7.90E-03)	4.24E-02 (7.40E-03)	4.09E-02 (7.35E-03)	5.79E-02 (8.74E-03)
7.0	1.14E-01 (1.74E-02)	1.08E+00 (3.77E-02)	1.20E+01 (1.30E-01)	1.22E+01 (1.27E-01)	5.62E-01 (2.72E-02)	1.14E-01 (1.23E-02)	3.30E-01 (2.09E-02)	1.15E-01 (1.23E-02)	6.07E-02 (8.95E-03)	4.26E-01 (2.37E-02)
8.0	6.48E-01 (2.97E-02)	4.98E-02 (8.11E-03)	1.82E-02 (4.91E-03)	1.44E-02 (4.39E-03)	9.72E-03 (3.58E-03)	7.96E-03 (3.24E-03)	6.05E-03 (2.03E-03)	1.17E-02 (3.94E-03)	7.90E-03 (3.23E-03)	1.33E-02 (4.10E-03)
9.0	1.17E-02 (4.83E-03)	2.01E-02 (5.15E-03)	1.36E-02 (4.24E-03)	1.09E-02 (3.80E-03)	1.23E-02 (4.02E-03)	1.71E-02 (4.75E-03)	7.54E-03 (3.16E-03)	1.74E-02 (4.79E-03)	5.24E-03 (2.63E-03)	6.75E-02 (9.44E-03)
10.0	6.31E-01 (2.89E-02)	1.02E+00 (3.67E-02)	1.13E-01 (1.22E-02)	3.40E-02 (6.70E-03)	3.24E-02 (6.54E-03)	2.98E-02 (6.23E-03)	5.47E-02 (8.50E-03)	2.17E-01 (1.69E-02)	2.17E+00 (5.35E-02)	1.58E+01 (1.45E-01)
11.0	1.03E+01 (1.17E-01)	3.92E-01 (2.27E-02)	8.96E-02 (1.09E-02)	4.74E-02 (7.91E-03)	3.00E-02 (6.29E-03)	1.95E-02 (5.07E-03)				

6Li(p,p') DDX (error) #8 Ep = 14 MeV LAB. ANGLE = 165 deg [POL = NON]										
energy	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0	0.00E+00 (0.00E+00)	0.00E+00 (0.00E+00)	0.00E+00 (0.00E+00)	0.00E+00 (0.00E+00)	0.00E+00 (0.00E+00)	1.51E-03 (1.30E-03)	2.25E-03 (1.68E-03)	4.34E-01 (2.33E-02)	5.99E-01 (2.74E-02)	3.45E-01 (2.08E-02)
1.0	3.32E-01 (2.94E-02)	1.64E+00 (4.53E-02)	3.51E+00 (6.43E-02)	4.07E+00 (7.14E-02)	4.29E+00 (7.34E-02)	4.50E+00 (7.51E-02)	4.36E+00 (7.40E-02)	4.05E+00 (7.13E-02)	3.69E+00 (6.81E-02)	3.48E+00 (6.61E-02)
2.0	3.37E+00 (4.50E-02)	3.19E+00 (4.32E-02)	3.06E+00 (6.20E-02)	2.92E+00 (6.05E-02)	2.48E+00 (5.80E-02)	2.71E+00 (5.83E-02)	2.58E+00 (5.69E-02)	2.48E+00 (5.58E-02)	2.59E+00 (5.70E-02)	2.61E+00 (5.87E-02)
3.0	2.77E+00 (6.05E-02)	3.60E+00 (6.70E-02)	3.71E+00 (7.00E-02)	2.83E+00 (6.11E-02)	2.63E+00 (5.89E-02)	2.63E+00 (5.89E-02)	2.64E+00 (5.91E-02)	2.52E+00 (5.77E-02)	2.69E+00 (5.94E-02)	2.71E+00 (5.98E-02)
4.0	2.43E+00 (5.89E-02)	2.49E+00 (5.96E-02)	2.54E+00 (5.79E-02)	2.45E+00 (5.69E-02)	2.33E+00 (5.55E-02)	2.22E+00 (5.44E-02)	3.35E+00 (6.45E-02)	4.73E+00 (7.90E-02)	2.73E+00 (6.08E-02)	2.27E+00 (5.47E-02)
5.0	1.12E+00 (3.84E-02)	9.35E-01 (3.51E-02)	8.34E-01 (3.32E-02)	8.50E-01 (3.37E-02)	1.14E+00 (3.87E-02)	4.49E+00 (7.70E-02)	1.32E+01 (1.32E-01)	5.27E+00 (8.34E-02)	5.10E-01 (2.60E-02)	2.13E-01 (1.68E-02)
6.0	9.04E-02 (1.14E-02)	1.16E-01 (1.24E-02)	1.15E+00 (3.90E-02)	5.09E+00 (7.20E-02)	2.47E+00 (5.71E-02)	1.05E-01 (1.10E-02)	3.57E-02 (6.86E-03)	4.74E-02 (7.91E-03)	5.60E-02 (8.60E-03)	9.40E-02 (1.11E-02)
7.0	4.36E-01 (2.40E-02)	6.19E+00 (9.04E-02)	1.93E+01 (1.60E-01)	1.94E+00 (5.04E-02)	1.38E-01 (1.35E-02)	2.70E-01 (1.09E-02)	2.39E-01 (1.70E-02)	4.24E-02 (7.49E-03)	1.60E-01 (1.49E-02)	8.74E-01 (3.40E-02)
8.0	2.20E-01 (1.70E-02)	3.42E-02 (4.72E-03)	8.77E-03 (3.40E-03)	1.49E-02 (4.44E-03)	3.05E-03 (2.01E-03)	1.62E-02 (4.63E-03)	1.27E-02 (4.09E-03)	9.25E-03 (3.50E-03)	9.65E-03 (3.57E-03)	8.61E-03 (3.37E-03)
9.0	7.230E-02 (5.61E-03)	8.39E-03 (3.33E-03)	1.24E-02 (4.04E-03)	1.15E-02 (3.90E-03)	8.12E-03 (3.20E-03)	9.20E-03 (3.48E-03)	7.05E-03 (3.05E-03)	6.94E-03 (3.03E-03)	2.84E-02 (4.12E-03)	1.80E-01 (1.54E-02)
10.0	9.59E-01 (3.56E-02)	4.45E-01 (2.42E-02)	3.45E-02 (6.75E-03)	4.48E-02 (7.68E-03)	2.84E-02 (6.15E-03)	4.98E-02 (8.11E-03)	8.12E-02 (1.04E-02)	5.13E-01 (2.60E-02)	5.19E+00 (8.28E-02)	2.09E+01 (1.66E-01)
11.0	4.03E+00 (7.29E-02)	1.45E-01 (1.40E-02)	6.02E-02 (1.03E-02)	4.45E-02 (7.66E-03)	1.66E-02 (4.68E-03)	1.24E-02 (4.05E-03)	1.34E-02 (4.21E-03)	1.34E-02 (4.21E-03)		

Appendix 3 Differential cross sections and analyzing powers for the ${}^7\text{Li}(p,p_0)$, ${}^7\text{Li}(p,p_1)$, and ${}^7\text{Li}(p,p_2)$ scattering at 14 MeV.

${}^7\text{Li}$ ground ($3/2^-$)			${}^7\text{Li}$ 1st (0.478 MeV, $1/2^-$)			${}^7\text{Li}$ 2nd (4.63 MeV, $7/2^-$)		
θ cm (deg)	$d\sigma/d\Omega$ (mb/sr)	$A(\theta)$	θ cm (deg)	$d\sigma/d\Omega$ (mb/sr)	$A(\theta)$	θ cm (deg)	$d\sigma/d\Omega$ (mb/sr)	$A(\theta)$
22.7	319.8 \pm 9.1	-0.045 \pm 0.036	22.8	8.11 \pm 0.19	-0.032 \pm 0.020	23.5	8.62 \pm 0.20	-0.030 \pm 0.022
34.0	227.8 \pm 4.6	-0.135 \pm 0.007	34.1	7.20 \pm 0.16	-0.140 \pm 0.017	35.1	8.65 \pm 0.19	-0.080 \pm 0.016
45.2	116.0 \pm 2.3	-0.218 \pm 0.011	45.3	6.61 \pm 0.14	-0.111 \pm 0.014	46.6	8.51 \pm 0.18	-0.165 \pm 0.018
56.2	47.5 \pm 0.95	-0.283 \pm 0.015	56.4	5.99 \pm 0.12	-0.145 \pm 0.012	57.9	8.98 \pm 0.19	-0.177 \pm 0.013
67.1	16.5 \pm 0.33	-0.276 \pm 0.015	67.2	5.08 \pm 0.11	-0.153 \pm 0.013	69.0	7.86 \pm 0.16	-0.210 \pm 0.015
77.7	8.37 \pm 0.17	0.192 \pm 0.012	77.8	3.94 \pm 0.083	-0.199 \pm 0.016	79.8	6.28 \pm 0.13	-0.211 \pm 0.016
88.1	9.25 \pm 0.19	0.427 \pm 0.022	88.2	3.13 \pm 0.067	-0.218 \pm 0.018	90.3	5.32 \pm 0.19	-0.102 \pm 0.051
98.2	11.6 \pm 0.24	0.322 \pm 0.017	98.4	2.65 \pm 0.057	-0.158 \pm 0.017	100.4	4.79 \pm 0.21	-0.0039 \pm 0.065
108.2	12.1 \pm 0.25	0.174 \pm 0.011	108.4	2.36 \pm 0.052	-0.192 \pm 0.017	110.4	4.38 \pm 0.095	0.104 \pm 0.016
117.8	11.0 \pm 0.22	0.089 \pm 0.009	118.0	2.14 \pm 0.048	-0.127 \pm 0.017	119.9	4.36 \pm 0.19	0.150 \pm 0.074
127.2	8.84 \pm 0.18	0.102 \pm 0.010	127.4	1.87 \pm 0.042	-0.103 \pm 0.018	129.1	4.32 \pm 0.17	0.164 \pm 0.067
136.4	6.52 \pm 0.14	0.203 \pm 0.015	136.5	1.69 \pm 0.039	-0.102 \pm 0.019	138.1	4.17 \pm 0.17	0.091 \pm 0.066
145.4	4.87 \pm 0.10	0.433 \pm 0.026	145.5	1.49 \pm 0.035	-0.030 \pm 0.021	146.8	3.75 \pm 0.17	0.061 \pm 0.068
154.2	4.17 \pm 0.089	0.631 \pm 0.036	154.3	1.46 \pm 0.035	-0.041 \pm 0.021	155.3	3.21 \pm 0.075	-0.033 \pm 0.021
162.9	4.19 \pm 0.090	0.604 \pm 0.035	162.9	1.52 \pm 0.036	-0.0014 \pm 0.022	163.6	2.94 \pm 0.070	-0.023 \pm 0.022
167.2	4.33 \pm 0.092	0.464 \pm 0.028	167.2	1.60 \pm 0.038	-0.044 \pm 0.021	167.8	2.82 \pm 0.069	-0.0065 \pm 0.025

Appendix 4 Double differential cross sections for the $^7\text{Li}(\text{p},\text{p}')$ scattering

energy /	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	
0.0 /	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.39E-02 (9.79E-03)	1.44E-01 (3.16E-02)	3.05E-01 (4.59E-02)	3.66E-01 (5.03E-02)	2.72E-01 (4.34E-02)
1.0 /	4.95E-01 (5.85E-02)	2.50E+00 (1.32E-01)	3.39E+00 (1.55E-01)	4.42E+00 (1.75E-01)	4.65E+00 (1.79E-01)	5.06E+00 (1.87E-01)	5.07E+00 (1.87E-01)	5.26E+00 (1.91E-01)	5.37E+00 (1.93E-01)	5.83E+00 (2.01E-01)	
2.0 /	5.35E+00 (1.92E-01)	5.54E+00 (1.94E-01)	5.84E+00 (2.01E-01)	5.61E+00 (1.97E-01)	5.57E+00 (1.94E-01)	6.06E+00 (2.04E-01)	5.65E+00 (1.98E-01)	5.76E+00 (2.03E-01)	5.57E+00 (1.96E-01)	6.27E+00 (2.08E-01)	
3.0 /	6.27E+00 (2.08E-01)	5.33E+00 (1.92E-01)	4.99E+00 (1.86E-01)	5.17E+00 (1.89E-01)	4.84E+00 (1.83E-01)	4.62E+00 (1.89E-01)	4.66E+00 (1.90E-01)	4.93E+00 (1.96E-01)	5.26E+00 (2.02E-01)	6.44E+00 (2.24E-01)	
4.0 /	7.26E+00 (2.31E-01)	5.51E+00 (2.07E-01)	5.19E+00 (2.01E-01)	4.81E+00 (1.95E-01)	5.16E+00 (2.06E-01)	5.18E+00 (1.95E-01)	4.88E+00 (1.95E-01)	5.02E+00 (1.97E-01)	5.85E+00 (1.98E-01)	5.25E+00 (2.02E-01)	
5.0 /	4.74E+00 (1.92E-01)	4.31E+00 (1.83E-01)	4.32E+00 (1.83E-01)	4.70E+00 (1.91E-01)	4.64E+00 (1.90E-01)	4.81E+00 (1.93E-01)	4.54E+00 (1.88E-01)	4.46E+00 (1.86E-01)	4.78E+00 (1.93E-01)	4.87E+00 (1.95E-01)	
6.0 /	4.84E+00 (1.94E-01)	6.15E+00 (2.19E-01)	5.54E+00 (2.07E-01)	5.03E+00 (1.98E-01)	4.68E+00 (1.91E-01)	4.48E+00 (1.91E-01)	5.36E+00 (2.04E-01)	6.74E+00 (2.29E-01)	6.47E+00 (2.24E-01)	6.30E+00 (2.21E-01)	
7.0 /	6.09E+00 (2.17E-01)	5.53E+00 (2.07E-01)	5.54E+00 (2.07E-01)	5.37E+00 (2.04E-01)	5.34E+00 (2.04E-01)	5.15E+00 (2.00E-01)	4.95E+00 (1.96E-01)	7.87E+00 (2.47E-01)	6.25E+00 (2.20E-01)	3.96E+00 (1.75E-01)	
8.0 /	3.85E+00 (1.73E-01)	3.93E+00 (1.75E-01)	3.91E+00 (1.74E-01)	3.61E+00 (1.67E-01)	3.87E+00 (1.73E-01)	4.13E+00 (1.79E-01)	4.75E+00 (1.92E-01)	5.23E+00 (2.01E-01)	6.17E+00 (2.19E-01)	1.09E+01 (2.71E-01)	
9.0 /	3.05E+01 (4.84E-01)	5.10E+01 (6.29E-01)	2.55E+01 (4.45E-01)	1.47E+01 (3.38E-01)	2.39E+01 (4.31E-01)	8.49E+00 (2.40E-01)	1.67E+00 (1.69E-01)	3.03E+00 (1.53E-01)	2.76E+00 (1.46E-01)	2.61E+00 (1.42E-01)	
10.0 /	2.43E+00 (1.37E-01)	2.34E+00 (1.35E-01)	2.20E+00 (1.31E-01)	2.21E+00 (1.31E-01)	1.91E+00 (1.22E-01)	2.00E+00 (1.25E-01)	2.04E+00 (1.24E-01)	1.87E+00 (1.20E-01)	2.23E+00 (1.32E-01)	2.40E+00 (1.37E-01)	
11.0 /	2.96E+00 (1.51E-01)	3.62E+00 (1.60E-01)	3.67E+00 (1.69E-01)	3.71E+00 (1.70E-01)	3.21E+00 (1.50E-01)	2.99E+00 (1.52E-01)	2.69E+00 (1.45E-01)	2.75E+00 (1.48E-01)	4.17E+00 (1.80E-01)	4.35E+00 (1.84E-01)	
12.0 /	3.04E+00 (1.51E-01)	3.23E+00 (1.58E-01)	1.51E+01 (3.42E-01)	4.60E+01 (5.98E-01)	2.34E+01 (4.27E-01)	4.83E+00 (1.94E-01)	4.02E+00 (1.77E-01)	3.19E+00 (1.57E-01)	3.11E+00 (1.55E-01)	3.84E+00 (1.73E-01)	
13.0 /	6.73E+00 (2.29E-01)	1.18E+01 (3.02E-01)	3.93E+01 (5.52E-01)	6.05E+01 (6.04E-01)	2.53E+01 (4.43E-01)	4.13E+01 (5.66E-01)	2.69E+02 (1.44E+00)	2.20E+03 (4.14E+00)	1.84E+03 (3.70E+00)	1.71E+02 (1.15E+00)	
14.0 /	7.03E+00 (2.34E-01)	5.47E-01 (6.52E-02)	3.20E-01 (4.90E-02)	6.54E-02 (2.25E-02)	8.07E-02 (2.62E-02)	5.90E-02 (2.14E-02)	3.50E-02 (1.65E-02)	2.49E-02 (1.39E-02)	4.09E-02 (1.78E-02)	8.10E-02 (2.51E-02)	
15.0 /	1.55E-02 (1.10E-02)	7.76E-03 (7.78E-03)	3.11E-02 (1.55E-02)	2.33E-02 (1.34E-02)	7.76E-03 (7.76E-03)	2.08E-02 (1.50E-02)	4.88E-02 (1.95E-02)	2.13E-02 (1.28E-02)	1.76E-02 (1.17E-02)	1.07E-02 (9.12E-03)	
16.0 /	1.26E-02 (9.88E-03)										

7Li(p,p') DDX (error) #### Ep = 14 MeV LAB. ANGLE = 50 deg [POL = NON]

energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00	(0.00E+00)	4.07E-02	(8.40E-03)						
1.0 /	5.12E-01	(2.98E-02)	1.36E+00	(4.86E-02)	1.71E+00	(5.45E-02)	1.95E+00	(5.82E-02)	2.35E+00	(6.39E-02)
2.0 /	2.41E+00	(6.47E-02)	2.63E+00	(6.75E-02)	2.52E+00	(6.41E-02)	2.75E+00	(6.90E-02)	2.80E+00	(6.97E-02)
3.0 /	2.70E+00	(6.84E-02)	2.52E+00	(6.61E-02)	2.39E+00	(6.43E-02)	2.38E+00	(6.42E-02)	2.35E+00	(6.38E-02)
4.0 /	2.03E+00	(5.95E-02)	2.00E+00	(5.90E-02)	1.93E+00	(5.81E-02)	1.96E+00	(5.85E-02)	2.23E+00	(6.24E-02)
5.0 /	1.93E+00	(5.81E-02)	2.22E+00	(6.22E-02)	2.43E+00	(6.52E-02)	3.07E+00	(7.32E-02)	2.94E+00	(7.16E-02)
6.0 /	3.29E+00	(7.57E-02)	3.35E+00	(7.64E-02)	3.56E+00	(7.88E-02)	4.58E+00	(9.30E-02)	4.96E+00	(9.94E-02)
7.0 /	1.93E+00	(5.80E-02)	1.89E+00	(5.75E-02)	2.04E+00	(5.97E-02)	3.69E+00	(8.02E-02)	3.75E+00	(8.09E-02)
8.0 /	1.40E+01	(1.57E-01)	3.85E+01	(2.59E-01)	3.72E+01	(2.55E-01)	1.22E+01	(1.44E-01)	4.43E+00	(8.79E-02)
9.0 /	1.55E+00	(5.19E-02)	1.05E+00	(4.28E-02)	1.04E+00	(4.26E-02)	0.16E-01	(3.77E-02)	8.19E-01	(3.78E-02)
10.0 /	4.44E-01	(2.78E-02)	3.71E-01	(2.54E-02)	3.90E-01	(2.61E-02)	3.27E-01	(2.39E-02)	2.40E-01	(2.13E-02)
11.0 /	1.70E-01	(1.76E-02)	1.75E-01	(1.75E-02)	1.63E-01	(1.69E-02)	1.86E-01	(1.80E-02)	2.54E-01	(2.11E-02)
12.0 /	5.91E+00	(1.02E-01)	3.37E+01	(2.42E-01)	3.04E+01	(2.30E-01)	5.89E+00	(1.01E-01)	1.29E+01	(1.50E-01)
13.0 /	1.49E+00	(5.09E-02)	7.63E+00	(1.15E-01)	9.10E+00	(1.26E-01)	5.98E+00	(8.33E-02)	3.77E+00	(8.11E-02)
14.0 /	3.80E-02	(8.14E-03)	3.38E-02	(7.68E-03)	2.27E-02	(6.29E-03)	3.41E-02	(7.72E-03)	1.40E-02	(4.95E-03)

7Li(p,p') DDX (error) #### Ep = 14 MeV LAB. ANGLE = 60 deg [POL = NON]

energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00	(0.00E+00)	4.97E-02	(9.25E-03)						
1.0 /	4.48E-01	(2.78E-02)	1.48E+00	(5.05E-02)	1.74E+00	(5.51E-02)	1.93E+00	(5.77E-02)	2.29E+00	(6.29E-02)
2.0 /	2.47E+00	(6.52E-02)	2.48E+00	(6.54E-02)	2.55E+00	(6.63E-02)	2.58E+00	(6.67E-02)	2.43E+00	(6.47E-02)
3.0 /	2.59E+00	(6.68E-02)	2.57E+00	(6.64E-02)	4.64E+00	(8.97E-02)	1.29E+01	(1.49E-01)	2.13E+01	(1.92E-01)
4.0 /	1.84E+00	(5.69E-02)	1.74E+00	(5.51E-02)	1.80E+00	(5.60E-02)	1.88E+00	(5.71E-02)	2.35E+00	(6.40E-02)
5.0 /	2.41E+00	(6.48E-02)	1.97E+00	(5.86E-02)	1.97E+00	(5.86E-02)	2.17E+00	(6.15E-02)	2.29E+00	(6.32E-02)
6.0 /	2.49E+00	(6.85E-02)	3.25E+00	(7.52E-02)	3.71E+00	(8.03E-02)	2.65E+00	(6.79E-02)	2.47E+00	(6.54E-02)
7.0 /	1.88E+00	(5.73E-02)	3.29E+00	(7.57E-02)	3.88E+00	(8.22E-02)	2.62E+00	(6.76E-02)	3.10E+00	(7.34E-02)
8.0 /	2.92E+00	(7.14E-02)	1.90E+00	(5.75E-02)	1.50E+00	(5.11E-02)	1.24E+00	(4.65E-02)	1.34E+00	(5.21E-02)
9.0 /	6.19E-01	(3.28E-02)	5.11E-01	(2.98E-02)	4.96E-01	(2.94E-02)	3.64E-01	(2.52E-02)	2.94E-01	(2.26E-02)
10.0 /	9.26E-02	(1.27E-02)	1.13E-01	(1.40E-02)	1.40E-01	(1.60E-02)	1.09E-01	(1.38E-02)	8.04E-02	(1.18E-02)
11.0 /	1.22E-01	(1.44E-02)	1.60E-01	(1.67E-02)	2.12E-01	(1.92E-02)	3.21E-01	(2.34E-02)	8.45E-01	(3.84E-02)
12.0 /	5.31E-01	(3.04E-01)	1.08E+02	(4.34E-01)	1.98E+01	(1.88E-01)	9.89E-01	(4.15E-02)	3.37E-01	(2.42E-02)
13.0 /	1.65E+00	(5.37E-02)	5.75E+00	(1.00E-01)	2.22E+00	(6.22E-02)	1.56E-01	(1.65E-02)	7.27E-02	(1.12E-02)
14.0 /	1.48E-02	(5.07E-03)	3.48E-03	(2.44E-03)	8.71E-03	(3.89E-03)	9.99E-04	(1.32E-03)	7.71E-03	(3.66E-03)

7Li(p,p') DDX (error) #### Ep = 14 MeV LAB. ANGLE = 70 deg [POL = NON]

energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00 (0.00E+00)	4.82E-02 (9.17E-03)	7.31E-02 (1.13E-02)	8.73E-02 (1.23E-02)	1.01E-01 (1.33E-02)	1.33E-01 (1.52E-02)				
1.0 /	4.23E-01 (3.30E-02)	1.74E+00 (5.54E-02)	2.60E+00 (6.73E-02)	4.10E+00 (8.45E-02)	6.93E+00 (1.10E-01)	1.05E+01 (1.35E-01)	1.08E+01 (1.37E-01)	5.05E+00 (9.38E-02)	2.55E+00 (6.65E-02)	2.37E+00 (6.43E-02)
2.0 /	2.50E+00 (6.40E-02)	2.56E+00 (6.49E-02)	2.36E+00 (6.41E-02)	2.29E+00 (6.32E-02)	2.30E+00 (6.33E-02)	2.23E+00 (6.23E-02)	1.10E+00 (6.05E-02)	2.04E+00 (5.96E-02)	7.03E+00 (5.36E-02)	2.25E+00 (6.24E-02)
3.0 /	2.20E+00 (6.19E-02)	2.24E+00 (6.28E-02)	3.04E+00 (7.29E-02)	3.22E+00 (7.47E-02)	2.14E+00 (6.09E-02)	1.93E+00 (5.79E-02)	1.72E+00 (5.46E-02)	1.45E+00 (5.36E-02)	1.75E+00 (5.50E-02)	1.49E+00 (5.42E-02)
4.0 /	1.67E+00 (5.38E-02)	1.69E+00 (5.41E-02)	1.99E+00 (5.88E-02)	2.34E+00 (6.39E-02)	1.81E+00 (5.61E-02)	2.01E+00 (5.90E-02)	2.35E+00 (6.39E-02)	1.84E+00 (5.65E-02)	1.84E+00 (5.65E-02)	1.00E+00 (5.40E-02)
5.0 /	1.91E+00 (5.76E-02)	2.21E+00 (6.19E-02)	2.49E+00 (6.57E-02)	2.56E+00 (6.67E-02)	2.65E+00 (6.70E-02)	2.50E+00 (6.59E-02)	2.41E+00 (6.47E-02)	2.16E+00 (6.13E-02)	1.99E+00 (5.80E-02)	2.24E+00 (6.23E-02)
6.0 /	2.74E+00 (6.49E-02)	1.97E+00 (5.85E-02)	1.80E+00 (5.59E-02)	1.42E+00 (4.76E-02)	1.35E+00 (4.84E-02)	1.42E+00 (4.97E-02)	1.38E+00 (4.89E-02)	1.52E+00 (5.14E-02)	1.87E+00 (5.49E-02)	3.46E+00 (7.75E-02)
7.0 /	5.03E+00 (9.34E-02)	7.42E+00 (1.15E-01)	2.29E+01 (1.99E-01)	2.89E+01 (2.24E-01)	9.80E+00 (1.30E-01)	3.04E+00 (7.28E-02)	1.58E+00 (5.23E-02)	1.17E+00 (4.51E-02)	1.01E+00 (4.18E-02)	8.61E-01 (3.47E-02)
8.0 /	7.44E-01 (3.64E-02)	8.74E-01 (3.89E-02)	2.66E+00 (6.79E-02)	4.10E+00 (8.43E-02)	9.46E-01 (1.0E-02)	4.77E-01 (2.48E-02)	3.52E-01 (2.47E-02)	3.07E-01 (2.51E-02)	2.43E-01 (2.05E-02)	1.75E-01 (1.74E-02)
9.0 /	8.75E-02 (1.23E-02)	8.29E-02 (1.20E-02)	7.03E-02 (1.11E-02)	6.86E-02 (1.09E-02)	6.21E-02 (1.04E-02)	5.09E-02 (9.39E-03)	7.03E-02 (1.11E-02)	6.86E-02 (1.23E-02)	4.44E-02 (8.98E-03)	7.42E-02 (1.13E-02)
10.0 /	4.98E-02 (9.30E-03)	4.20E-02 (8.54E-03)	6.04E-02 (1.03E-02)	4.73E-02 (9.06E-03)	4.61E-02 (8.95E-03)	5.57E-02 (9.03E-03)	1.09E-01 (1.38E-02)	1.34E-01 (1.53E-02)	2.03E-01 (1.08E-02)	1.05E+00 (4.27E-02)
11.0 /	9.20E+00 (1.27E-01)	2.69E+01 (2.16E-01)	6.38E+00 (1.05E-01)	1.21E+00 (4.58E-02)	8.41E+00 (1.21E-01)	5.02E+01 (2.95E-01)	3.07E+01 (2.31E-01)	1.89E+00 (5.73E-02)	2.22E-01 (1.94E-02)	1.17E-01 (1.43E-02)
12.0 /	8.41E-02 (6.30E-02)	1.05E-02 (1.05E-02)	4.13E-02 (8.47E-03)	1.29E-01 (1.50E-02)	6.29E-01 (3.30E-02)	1.67E+00 (5.38E-02)	5.40E-01 (3.08E-02)	1.10E+00 (4.38E-02)	7.79E+00 (1.14E-01)	7.23E+00 (1.12E-01)
13.0 /	4.65E-01 (2.84E-02)	5.17E-02 (9.47E-03)	6.02E-02 (1.02E-02)	9.01E-02 (1.25E-02)	5.54E-02 (9.82E-03)	1.95E-02 (5.82E-03)	1.70E-02 (5.43E-03)	3.04E-03 (2.30E-03)	9.12E-03 (3.98E-03)	6.93E-03 (3.47E-03)

7Li(p,p') DDX (error) #### Ep = 14 MeV LAB. ANGLE = 80 deg [POL = NON]

energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00 (0.00E+00)	0.00E+00 (0.00E+00)	0.00E+00 (0.00E+00)	0. E+00 (8.00E+00)	0.00E+00 (0.00E+00)	3.43E-03 (2.44E-03)	3.50E-04 (7.80E-03)	6.31E-02 (1.05E-02)	7.88E-02 (1.17E-02)	4.40E-02 (8.74E-03)
1.0 /	2.39E-01 (2.02E-02)	1.38E+00 (4.87E-02)	1.75E+00 (5.52E-02)	1.99E+00 (5.89E-02)	2.10E+00 (6.05E-02)	2.24E+00 (6.24E-02)	2.19E+00 (6.17E-02)	2.32E+00 (6.35E-02)	2.32E+00 (6.35E-02)	2.49E+00 (6.46E-02)
2.0 /	2.57E+00 (6.48E-02)	2.35E+00 (6.39E-02)	2.29E+00 (6.31E-02)	2.09E+00 (6.02E-02)	2.01E+00 (5.91E-02)	1.97E+00 (5.86E-02)	1.98E+00 (5.81E-02)	1.92E+00 (5.78E-02)	1.93E+00 (5.80E-02)	2.24E+00 (6.25E-02)
3.0 /	3.14E+00 (7.39E-02)	3.04E+00 (7.30E-02)	2.17E+00 (6.15E-02)	1.85E+00 (5.67E-02)	1.80E+00 (5.60E-02)	1.74E+00 (5.49E-02)	1.72E+00 (5.41E-02)	1.60E+00 (5.41E-02)	1.62E+00 (5.31E-02)	1.66E+00 (5.34E-02)
4.0 /	1.97E+00 (5.84E-02)	2.57E+00 (6.68E-02)	2.34E+00 (6.38E-02)	1.95E+00 (5.82E-02)	1.76E+00 (5.53E-02)	1.72E+00 (5.46E-02)	1.72E+00 (5.47E-02)	1.88E+00 (5.72E-02)	2.13E+00 (6.49E-02)	2.22E+00 (6.21E-02)
5.0 /	2.30E+00 (6.33E-02)	2.23E+00 (6.22E-02)	2.05E+00 (5.97E-02)	1.82E+00 (5.62E-02)	1.74E+00 (5.51E-02)	1.53E+00 (5.14E-02)	1.45E+00 (5.03E-02)	1.67E+00 (5.39E-02)	2.15E+00 (6.11E-02)	1.62E+00 (5.70E-02)
6.0 /	1.57E+00 (5.22E-02)	1.31E+00 (4.74E-02)	1.28E+00 (4.71E-02)	1.44E+00 (5.00E-02)	1.57E+00 (5.23E-02)	2.07E+00 (5.99E-02)	3.71E+00 (8.03E-02)	1.12E+01 (1.40E-01)	2.57E+01 (2.11E-01)	1.64E+01 (1.69E-01)
7.0 /	4.15E+00 (8.49E-02)	1.61E+00 (5.29E-02)	9.99E-01 (4.17E-02)	6.98E-01 (3.48E-02)	6.80E-01 (3.44E-02)	5.41E-01 (3.07E-02)	4.94E-01 (2.93E-02)	4.94E-01 (2.93E-02)	5.77E-01 (3.17E-02)	1.61E+00 (5.29E-02)
8.0 /	3.45E+00 (7.75E-02)	0.98E-01 (3.95E-02)	2.03E-01 (2.22E-02)	1.91E-01 (1.82E-02)	1.52E-01 (1.62E-02)	8.52E-02 (1.22E-02)	7.97E-02 (1.18E-02)	6.71E-02 (1.08E-02)	6.17E-02 (1.04E-02)	6.09E-02 (1.03E-02)
9.0 /	6.27E-02 (1.04E-02)	7.54E-02 (1.15E-02)	5.84E-02 (1.01E-02)	4.35E-02 (8.49E-03)	4.48E-02 (8.82E-03)	3.24E-02 (7.53E-03)	4.05E-02 (8.38E-03)	5.87E-02 (8.01E-02)	4.08E-02 (9.21E-03)	7.15E-02 (1.11E-02)
10.0 /	7.00E-02 (1.14E-02)	1.15E-01 (1.41E-02)	9.97E-02 (1.32E-02)	2.69E-01 (2.16E-02)	1.92E+00 (5.77E-02)	1.49E+01 (1.61E-01)	1.30E+01 (1.62E-01)	1.64E+00 (5.31E-02)	2.94E+00 (7.17E-02)	2.79E+01 (2.20E-01)
11.0 /	5.71E+01 (3.15E-01)	8.64E+00 (1.23E-01)	4.05E-01 (2.65E-02)	1.40E-01 (1.56E-02)	1.16E-01 (1.42E-02)	9.91E-02 (1.31E-02)	5.80E-02 (1.00E-02)	4.94E-02 (9.20E-03)	3.61E-02 (7.92E-03)	1.03E-01 (1.34E-02)
12.0 /	3.95E-01 (2.62E-02)	2.75E+00 (6.91E-02)	2.18E+00 (6.15E-02)	3.46E-01 (2.45E-02)	7.00E-01 (3.49E-02)	5.88E+00 (1.01E-01)	1.16E+01 (1.42E-01)	1.50E+00 (5.10E-02)	6.92E-02 (1.10E-02)	3.95E-02 (8.26E-03)
13.0 /	4.39E-02 (8.73E-03)	6.94E-02 (1.10E-02)	2.30E-02 (6.32E-03)	1.13E-02 (4.43E-03)	4.39E-03 (2.76E-03)	5.64E-03 (3.13E-03)	9.99E-03 (4.17E-03)	1.00E-02 (4.17E-03)	3.92E-03 (2.61E-03)	3.92E-03 (2.61E-03)

7Li(p,p') DDX (error) # Ep = 14 MeV LAB. ANGLE = 90 deg [POL = NON]										
energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00 (0.00E+00)	3.44E-03 (2.44E-03)	2.77E-02 (6.95E-03)	5.05E-02 (9.37E-03)	4.97E-02 (9.29E-03)	3.39E-02 (7.68E-03)				
1.0 /	2.29E-01 (1.99E-02)	1.35E+00 (4.84E-02)	1.69E+00 (5.43E-02)	1.94E+00 (5.80E-02)	2.02E+00 (5.93E-02)	2.22E+00 (6.22E-02)	2.21E+00 (6.20E-02)	2.27E+00 (6.29E-02)	2.51E+00 (6.60E-02)	2.49E+00 (6.58E-02)
2.0 /	2.21E+00 (6.21E-02)	2.00E+00 (5.89E-02)	1.96E+00 (5.83E-02)	1.86E+00 (5.70E-02)	1.80E+00 (5.60E-02)	2.02E+00 (5.93E-02)	1.94E+00 (5.81E-02)	1.98E+00 (5.81E-02)	2.23E+00 (6.22E-02)	2.99E+00 (7.20E-02)
3.0 /	2.57E+00 (6.69E-02)	1.95E+00 (5.83E-02)	1.84E+00 (5.65E-02)	1.71E+00 (5.46E-02)	1.65E+00 (5.36E-02)	1.70E+00 (5.44E-02)	1.64E+00 (5.34E-02)	1.69E+00 (5.43E-02)	2.04E+00 (5.95E-02)	2.85E+00 (7.04E-02)
4.0 /	2.46E+00 (6.53E-02)	1.63E+00 (5.32E-02)	1.73E+00 (5.49E-02)	1.81E+00 (5.60E-02)	1.97E+00 (5.85E-02)	2.02E+00 (6.01E-02)	2.13E+00 (6.08E-02)	1.93E+00 (5.79E-02)	2.08E+00 (6.10E-02)	1.76E+00 (5.53E-02)
5.0 /	1.47E-01 (5.06E-02)	1.38E+00 (4.90E-02)	1.30E+00 (4.75E-02)	1.21E+00 (4.58E-02)	1.13E+00 (4.44E-02)	1.31E+00 (4.77E-02)	1.93E+00 (5.79E-02)	1.51E+00 (5.12E-02)	1.31E+00 (4.77E-02)	1.25E+00 (4.67E-02)
6.0 /	1.37E+00 (4.88E-02)	1.81E+00 (5.65E-02)	3.87E+00 (8.20E-02)	1.21E+01 (1.45E-01)	1.00E+01 (1.32E-01)	3.30E+00 (7.57E-02)	1.19E+00 (4.55E-02)	6.97E-01 (3.40E-02)	1.25E-01 (3.29E-02)	
7.0 /	5.60E-01 (3.12E-02)	4.93E-01 (2.93E-02)	4.04E-01 (2.65E-02)	3.47E-01 (2.46E-02)	3.35E-01 (2.41E-02)	3.51E-01 (2.47E-02)	1.16E+00 (4.49E-02)	3.06E+00 (7.29E-02)	9.78E-01 (4.12E-02)	1.35E-01 (3.52E-02)
8.0 /	1.14E-01 (1.41E-02)	5.55E-02 (9.82E-03)	7.24E-02 (1.12E-02)	4.16E-02 (8.50E-03)	5.53E-02 (9.80E-03)	8.67E-02 (1.23E-02)	7.46E-02 (1.14E-02)	4.31E-02 (1.05E-02)	4.04E-02 (8.45E-03)	5.07E-02 (9.39E-03)
9.0 /	4.89E-02 (9.22E-03)	5.10E-02 (9.41E-03)	5.14E-02 (9.47E-03)	6.57E-02 (1.07E-02)	7.08E-02 (1.11E-02)	7.44E-02 (1.14E-02)	1.16E-01 (1.42E-02)	1.16E-01 (1.42E-02)	4.16E-01 (2.69E-02)	3.52E+00 (7.82E-02)
10.0 /	1.57E+01 (1.65E-01)	6.98E+00 (1.10E-01)	1.30E+00 (4.75E-02)	9.97E+00 (1.32E-01)	6.33E+01 (3.32E-01)	3.95E+01 (2.62E-01)	2.29E+00 (6.30E-02)	2.44E-01 (2.66E-02)	1.34E-01 (1.52E-02)	9.68E-02 (1.30E-02)
11.0 /	8.63E-02 (1.22E-02)	5.41E-02 (9.69E-03)	6.01E-02 (1.02E-02)	3.79E-02 (8.11E-03)	4.53E-02 (8.07E-03)	4.50E-02 (8.04E-03)	2.59E-01 (2.08E-02)	2.10E+00 (4.15E-02)	4.88E+00 (9.21E-02)	1.08E+00 (4.33E-02)
12.0 /	2.08E-01 (1.90E-02)	4.37E-01 (2.74E-02)	3.69E+00 (8.01E-02)	1.15E+01 (1.41E-01)	2.90E+00 (7.09E-02)	1.40E-01 (1.56E-02)	4.01E-02 (8.35E-03)	1.69E-02 (5.42E-03)	1.02E-02 (5.62E-03)	2.14E-02 (6.12E-03)
13.0 /	1.67E-02 (5.38E-03)	1.39E-02 (4.91E-03)	6.85E-03 (3.45E-03)	7.05E-03 (3.50E-03)	6.92E-03 (3.47E-03)	3.50E-03 (2.47E-03)				

7Li(p,p') DDX (error) # Ep = 14 MeV LAB. ANGLE = 100 deg [POL = NON]										
energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00 (0.00E+00)	3.44E-03 (2.44E-03)	2.04E-02 (5.96E-03)	5.69E-02 (9.95E-03)	7.23E-02 (1.12E-02)	5.75E-02 (1.00E-02)				
1.0 /	2.08E-01 (2.24E-02)	1.22E+00 (4.60E-02)	1.69E+00 (5.43E-02)	1.08E+00 (5.71E-02)	2.01E+00 (5.96E-02)	2.14E+00 (6.10E-02)	2.27E+00 (6.29E-02)	2.35E+00 (6.40E-02)	2.41E+00 (6.48E-02)	2.15E+00 (6.12E-02)
2.0 /	1.99E+00 (5.88E-02)	1.94E+00 (5.81E-02)	1.82E+00 (5.65E-02)	1.84E+00 (5.64E-02)	1.92E+00 (5.77E-02)	1.00E+00 (5.72E-02)	2.02E+00 (5.93E-02)	2.37E+00 (6.43E-02)	2.22E+00 (6.21E-02)	2.26E+00 (6.27E-02)
3.0 /	2.17E+00 (6.12E-02)	1.77E+00 (5.56E-02)	1.82E+00 (5.63E-02)	1.77E+00 (5.54E-02)	1.72E+00 (5.46E-02)	1.07E+00 (5.70E-02)	2.11E+00 (6.05E-02)	2.14E+00 (6.10E-02)	2.69E+00 (6.84E-02)	2.32E+00 (6.31E-02)
4.0 /	1.93E+00 (5.70E-02)	1.93E+00 (5.78E-02)	2.02E+00 (5.92E-02)	2.23E+00 (6.22E-02)	2.03E+00 (5.94E-02)	1.82E+00 (5.62E-02)	1.63E+00 (5.31E-02)	1.42E+00 (4.95E-02)	1.32E+00 (4.79E-02)	1.17E+00 (4.52E-02)
5.0 /	1.17E+00 (4.50E-02)	1.00E+00 (4.33E-02)	1.11E+00 (4.39E-02)	1.17E+00 (4.51E-02)	1.70E+00 (5.54E-02)	1.77E+00 (5.51E-02)	1.56E+00 (5.21E-02)	1.01E+00 (5.65E-02)	3.20E+00 (7.46E-02)	1.00E+01 (1.32E-01)
6.0 /	1.06E+01 (1.00E-01)	0.23E+00 (1.20E-01)	2.05E+00 (5.97E-02)	1.05E+00 (5.67E-02)	1.92E+00 (5.77E-02)	7.01E-01 (3.60E-02)	4.23E-01 (2.71E-02)	4.04E-01 (2.65E-02)	5.00E-01 (2.50E-02)	3.35E-01 (2.41E-02)
7.0 /	2.63E-01 (2.14E-02)	3.00E-01 (2.20E-02)	2.67E-01 (2.15E-02)	5.42E-01 (3.07E-02)	2.17E+00 (6.13E-02)	1.83E+00 (5.64E-02)	2.45E-01 (2.04E-02)	6.92E-01 (1.10E-02)	4.33E-02 (8.67E-03)	4.97E-02 (9.29E-03)
8.0 /	4.45E-02 (1.06E-02)	9.65E-02 (1.29E-02)	7.21E-02 (1.12E-02)	4.02E-02 (9.15E-03)	5.15E-02 (9.44E-03)	5.90E-02 (1.01E-02)	3.54E-02 (7.84E-03)	4.55E-02 (8.99E-03)	5.04E-02 (9.38E-03)	4.92E-02 (1.10E-02)
9.0 /	5.05E-02 (1.01E-02)	8.75E-02 (1.23E-02)	1.00E-01 (1.32E-02)	2.94E-01 (2.24E-02)	2.64E+00 (6.77E-02)	1.29E+00 (1.50E-01)	6.51E+00 (1.04E-01)	1.10E+00 (4.53E-02)	1.05E+01 (1.45E-01)	6.61E+01 (3.39E-01)
10.0 /	3.40E+01 (2.46E-01)	1.62E+00 (5.31E-02)	1.29E-01 (1.49E-02)	6.76E-02 (1.00E-02)	5.20E-02 (9.57E-03)	4.22E-02 (8.56E-03)	3.99E-02 (8.32E-03)	3.60E-02 (8.40E-03)	4.35E-02 (8.69E-03)	2.98E-02 (7.17E-03)
11.0 /	2.46E-02 (4.51E-03)	3.95E-02 (8.29E-03)	9.76E-02 (1.30E-02)	6.89E-01 (3.46E-02)	4.03E+00 (9.16E-02)	4.22E+00 (8.56E-02)	4.33E-01 (2.74E-02)	1.16E-01 (1.42E-02)	1.55E-01 (1.44E-02)	1.11E+00 (4.39E-02)
12.0 /	7.30E+00 (1.13E-01)	5.70E+00 (9.95E-02)	3.77E-01 (2.54E-02)	2.55E-02 (4.64E-03)	9.42E-03 (4.05E-03)	1.26E-02 (4.40E-03)	2.10E-03 (1.95E-03)	1.50E-02 (5.11E-03)	1.44E-02 (5.01E-03)	9.57E-03 (4.00E-03)

7LI(p,p') DDX (error) *** EP = 14 MeV LAB. ANGLE = 110 deg [POL = NON

7Li(p,p') DDX (error) 666 EP = 14 MeV LAB. ANGLE = 120 deg { POL = NON

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LAB. ANGLE = 130 deg
{ P01 = NON

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7Li(p,p') DDX (error) # Ep = 14 MeV LAB. ANGLE = 140 deg [POL = NON]

Energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00 (0.00E+00)	1.09E-02 (4.37E-03)	1.62E-02 (5.32E-03)	3.68E-02 (8.02E-03)	2.20E-02 (6.20E-03)					
1.0 /	2.34E-01 (2.03E-02)	1.34E+00 (4.85E-02)	1.99E+00 (5.91E-02)	2.13E+00 (6.10E-02)	2.20E+00 (6.20E-02)	2.36E+00 (6.43E-02)	2.33E+00 (6.38E-02)	2.33E+00 (6.39E-02)	2.25E+00 (6.27E-02)	2.33E+00 (6.39E-02)
2.0 /	2.76E+00 (6.29E-02)	2.37E+00 (6.45E-02)	2.37E+00 (6.44E-02)	2.37E+00 (6.37E-02)	2.24E+00 (6.24E-02)	2.25E+00 (6.28E-02)	2.20E+00 (6.21E-02)	2.30E+00 (6.35E-02)	2.00E+00 (6.04E-02)	2.17E+00 (6.16E-02)
3.0 /	2.29E+00 (6.33E-02)	2.24E+00 (6.74E-02)	2.44E+00 (6.34E-02)	3.18E+00 (7.45E-02)	2.95E+00 (7.10E-02)	2.25E+00 (6.27E-02)	1.79E+00 (5.83E-02)	1.60E+00 (5.42E-02)	1.40E+00 (5.09E-02)	1.31E+00 (4.70E-02)
4.0 /	1.24E+00 (4.66E-02)	1.18E+00 (4.54E-02)	1.07E+00 (4.33E-02)	1.12E+00 (4.12E-02)	1.21E+00 (4.00E-02)	1.43E+00 (4.99E-02)	2.02E+00 (5.91E-02)	5.98E+00 (1.02E-01)	1.36E+01 (1.54E-01)	8.06E+00 (1.19E-01)
5.0 /	2.08E+00 (6.03E-02)	9.79E-01 (4.13E-02)	6.37E-01 (3.34E-02)	4.53E-01 (2.81E-02)	3.91E-01 (2.61E-02)	3.34E-01 (2.42E-02)	4.31E-01 (2.75E-02)	1.13E+00 (4.44E-02)	1.37E+00 (4.89E-02)	3.91E-01 (2.61E-02)
6.0 /	1.22E-01 (1.44E-02)	9.44E-02 (1.28E-02)	7.09E-02 (1.11E-02)	5.54E-02 (9.84E-03)	2.04E-01 (1.89E-02)	2.29E+00 (6.32E-02)	4.13E+00 (8.49E-02)	1.04E+00 (4.27E-02)	6.50E-02 (1.07E-02)	3.82E-02 (8.17E-03)
7.0 /	2.32E-02 (6.36E-03)	1.65E-03 (5.37E-03)	3.02E-02 (7.27E-03)	1.82E-02 (5.63E-03)	4.90E-02 (9.25E-03)	3.65E-02 (7.98E-03)	3.60E-02 (7.93E-03)	6.87E-02 (1.01E-02)	1.41E-01 (1.57E-02)	1.61E+00 (5.34E-02)
8.0 /	7.05E+00 (6.11E-01)	2.97E+00 (7.20E-02)	1.03E+00 (4.25E-02)	1.04E+01 (1.35E-01)	2.29E+01 (2.00E-01)	4.32E+00 (8.69E-02)	1.55E-01 (1.64E-02)	5.80E-02 (1.01E-02)	3.32E-02 (7.62E-03)	2.55E-02 (6.68E-03)
9.0 /	2.57E-02 (6.70E-03)	1.01E-02 (4.20E-03)	4.39E-03 (2.77E-03)	1.64E-02 (5.30E-03)	1.40E-02 (4.95E-03)	1.40E-02 (4.94E-03)	6.99E-03 (3.49E-03)	1.14E-02 (4.45E-03)	4.34E-03 (2.75E-03)	7.04E-03 (3.51E-03)
10.0 /	7.43E-03 (3.60E-03)	2.15E-02 (6.13E-03)	1.36E-01 (1.54E-02)	1.22E+00 (4.62E-02)	2.30E+00 (6.34E-02)	4.54E-01 (2.82E-02)	3.43E-02 (7.74E-03)	2.44E-02 (6.92E-03)	2.07E-02 (7.00E-03)	3.27E-02 (7.55E-03)
11.0 /	1.86E-01 (1.80E-02)	1.76E+00 (5.54E-02)	3.94E+00 (8.30E-02)	8.92E-01 (3.95E-02)	3.50E-02 (7.02E-03)	7.08E-03 (3.71E-03)	8.31E-03 (3.01E-03)	5.24E-03 (3.03E-03)	5.05E-03 (2.97E-03)	5.94E-03 (3.22E-03)

7Li(p,p') DDX (error) # Ep = 14 MeV LAB. ANGLE = 150 deg [POL = NON]

Energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00 (0.00E+00)	1.74E-03 (1.74E-03)	1.86E-02 (5.70E-03)	2.35E-02 (6.40E-03)	3.31E-02 (7.60E-03)					
1.0 /	2.40E-01 (2.13E-02)	1.39E+00 (4.92E-02)	1.08E+00 (5.75E-02)	2.15E+00 (6.12E-02)	2.35E+00 (6.39E-02)	2.32E+00 (6.36E-02)	2.39E+00 (6.45E-02)	2.39E+00 (6.44E-02)	2.29E+00 (6.32E-02)	2.40E+00 (6.47E-02)
2.0 /	2.37E+00 (6.43E-02)	2.28E+00 (6.30E-02)	2.30E+00 (6.34E-02)	2.20E+00 (6.19E-02)	2.10E+00 (6.17E-02)	2.30E+00 (6.33E-02)	2.30E+00 (6.34E-02)	1.94E+00 (5.81E-02)	2.00E+00 (5.90E-02)	2.20E+00 (6.31E-02)
3.0 /	2.39E+00 (6.46E-02)	2.40E+00 (6.47E-02)	2.95E+00 (7.16E-02)	2.89E+00 (7.09E-02)	2.11E+00 (6.04E-02)	1.75E+00 (5.51E-02)	1.50E+00 (5.25E-02)	1.45E+00 (5.61E-02)	1.20E+00 (4.96E-02)	1.23E+00 (4.67E-02)
4.0 /	1.14E+00 (4.45E-02)	1.06E+00 (4.36E-02)	1.15E+00 (4.47E-02)	1.19E+00 (4.55E-02)	1.67E+00 (5.39E-02)	3.81E+00 (8.16E-02)	1.06E+01 (1.36E-01)	8.04E+00 (1.24E-01)	2.92E+00 (7.12E-02)	1.22E+00 (4.61E-02)
5.0 /	7.04E-01 (3.70E-02)	4.89E-01 (2.91E-02)	7.04E-01 (2.45E-02)	3.34E-01 (2.41E-02)	2.43E-01 (2.04E-02)	3.65E-01 (2.52E-02)	1.11E+00 (4.30E-01)	1.23E+00 (4.62E-02)	3.74E-01 (2.62E-02)	1.07E-01 (1.36E-02)
6.0 /	7.57E-02 (1.15E-02)	4.75E-02 (9.08E-03)	7.67E-02 (1.15E-02)	8.29E-01 (3.79E-02)	4.39E+00 (8.93E-02)	3.80E+00 (8.13E-02)	4.21E-01 (2.71E-02)	4.54E-02 (8.93E-03)	2.55E-01 (6.48E-02)	3.10E-02 (7.35E-03)
7.0 /	2.11E-02 (6.66E-03)	2.37E-02 (6.42E-03)	2.19E-02 (6.17E-03)	3.09E-02 (8.22E-03)	5.20E-02 (9.50E-03)	6.81E-02 (1.09E-02)	3.40E-02 (2.43E-03)	3.58E+00 (7.09E-03)	6.36E+00 (1.05E-01)	1.15E+00 (4.47E-02)
8.0 /	2.30E+00 (6.32E-02)	1.61E+01 (1.67E-01)	1.20E+01 (1.49E-01)	9.04E-01 (1.96E-01)	6.65E-02 (1.07E-02)	4.94E-02 (9.28E-03)	5.15E-02 (9.44E-03)	2.16E-02 (6.12E-03)	1.09E-02 (5.42E-03)	1.70E-02 (5.43E-03)
9.0 /	5.29E-03 (3.03E-03)	1.14E-02 (4.44E-03)	3.51E-03 (2.47E-03)	1.74E-03 (1.74E-03)	1.39E-02 (4.92E-03)	6.94E-02 (3.40E-03)	1.04E-02 (4.24E-03)	3.40E-03 (2.44E-03)	4.02E-03 (2.09E-03)	1.27E-02 (4.09E-03)
10.0 /	5.72E-02 (9.37E-03)	5.77E-01 (3.17E-02)	1.63E+00 (5.32E-02)	5.42E-01 (3.07E-02)	3.09E-02 (7.33E-03)	3.61E-02 (7.92E-03)	2.65E-02 (6.78E-03)	2.54E-02 (6.34E-03)	6.42E-02 (1.07E-02)	6.00E-01 (3.39E-02)
11.0 /	3.79E+00 (6.11E-02)	3.23E+00 (7.49E-02)	2.65E-01 (2.15E-02)	2.37E-02 (4.42E-03)	6.72E-03 (3.42E-03)	3.71E-03 (2.54E-03)	5.21E-03 (3.01E-03)	0.00E+00 (0.00E+00)	6.57E-03 (3.30E-03)	5.05E-03 (3.19E-03)

7Li(p,p') DDX (error) # Ep = 14 MeV LAB. ANGLE = 160 deg [POL = NON]

Energy/	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.0 /	0.00E+00 (0.00E+00)	1.40E-03 (1.40E-03)	1.24E-02 (4.62E-03)	1.33E-02 (7.57E-03)	2.76E-02 (4.89E-03)	1.79E-02 (5.06E-03)				
1.0 /	2.13E-01 (2.01E-02)	1.42E+00 (4.15E-02)	1.83E+00 (5.61E-02)	2.26E+00 (6.24E-02)	2.43E+00 (6.47E-02)	2.49E+00 (6.56E-02)	2.41E+00 (6.45E-02)	2.37E+00 (6.40E-02)	2.55E+00 (6.34E-02)	2.62E+00 (6.72E-02)
2.0 /	2.50E+00 (6.37E-02)	2.35E+00 (6.37E-02)	2.33E+00 (6.28E-02)	2.28E+00 (6.27E-02)	2.29E+00 (6.20E-02)	2.33E+00 (6.20E-02)	2.03E+00 (5.91E-02)	1.97E+00 (5.43E-02)	2.01E+00 (5.00E-02)	2.33E+00 (6.34E-02)
3.0 /	2.51E+00 (6.50E-02)	2.50E+00 (6.56E-02)	2.71E+00 (6.48E-02)	2.93E+00 (5.91E-02)	1.60E+00 (5.25E-02)	1.50E+00 (5.11E-02)	1.43E+00 (4.99E-02)	1.50E+00 (4.76E-02)	1.20E+00 (4.49E-02)	1.15E+00 (4.42E-02)
4.0 /	1.11E+00 (4.39E-02)	1.00E+00 (4.33E-02)	1.19E+00 (4.54E-02)	1.76E+00 (5.43E-02)	4.77E+00 (9.10E-02)	9.94E+00 (1.31E-01)	5.36E+00 (9.45E-02)	2.05E+00 (5.97E-02)	1.22E+00 (4.60E-02)	7.43E-01 (3.64E-02)
5.0 /	4.35E-01 (2.75E-02)	3.49E-01 (2.46E-02)	3.84E-01 (2.30E-02)	2.51E-01 (2.39E-02)	3.21E-01 (2.37E-02)	7.92E-01 (3.71E-02)	1.39E+00 (4.91E-02)	5.29E-01 (3.43E-02)	1.10E-01 (1.40E-02)	5.66E-02 (9.34E-03)
6.0 /	4.29E-02 (6.64E-03)	8.35E-02 (1.20E-02)	1.00E+00 (4.32E-02)	5.50E+00 (9.37E-02)	4.20E+00 (8.43E-02)	4.63E-01 (2.84E-02)	4.86E-02 (9.10E-03)	3.51E-02 (7.81E-03)	2.85E-02 (7.04E-03)	2.90E-02 (7.10E-03)
7.0 /	2.17E-02 (6.14E-03)	4.92E-02 (8.34E-03)	4.14E-02 (8.40E-03)	4.46E-02 (8.00E-03)	1.63E-01 (1.60E-02)	1.96E+00 (5.84E-02)	6.91E+00 (1.10E-01)	2.40E+00 (6.44E-02)	1.26E+00 (4.64E-02)	1.10E+01 (1.3E-01)
8.0 /	1.60E+01 (1.71E-01)	1.00E+00 (5.72E-02)	1.00E-01 (1.32E-02)	5.20E-02 (9.51E-03)	2.02E-02 (7.00E-03)	2.64E-02 (6.70E-03)	1.72E-02 (5.40E-03)	1.70E-02 (5.37E-03)	1.44E-02 (5.00E-03)	8.32E-03 (3.00E-03)
9.0 /	1.34E-02 (4.83E-03)	1.43E-02 (4.99E-03)	4.52E-03 (3.37E-03)	1.10E-02 (4.53E-03)	5.66E-03 (3.14E-03)	7.39E-03 (3.58E-03)	3.93E-03 (2.61E-03)	8.30E-03 (3.00E-03)	2.50E-02 (6.59E-03)	1.12E-01 (1.40E-02)
10.0 /	6.67E-01 (5.00E-02)	1.19E+00 (4.51E-02)	2.43E-01 (2.06E-02)	4.06E-02 (9.19E-03)	2.55E-02 (6.66E-03)	4.84E-02 (9.17E-03)	3.61E-02 (7.95E-03)	9.72E-02 (1.30E-02)	8.37E-01 (3.01E-02)	4.62E+00 (8.95E-02)
11.0 /	3.51E+00 (7.81E-02)	2.36E-01 (2.03E-02)	2.35E-02 (6.31E-03)	1.41E-02 (4.95E-03)	5.20E-03 (3.03E-03)	9.14E-03 (3.99E-03)	5.64E-03 (3.14E-03)	2.10E-03 (1.95E-03)	2.30E-03 (2.03E-03)	3.40E-03 (2.44E-03)

		[POL = NON]																		
		0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9									
0.0 /	0.00E+00	(0.00E+00)	0.00E+00	(0.00E+00)	0.00E+00	(0.00E+00)	0.00E+00	(0.00E+00)	5.23E-03	(3.02E-03)	1.90E-02	(5.74E-03)	2.97E-02	(7.20E-03)	2.14E-02	(4.10E-03)	2.85E-02	(5.90E-03)		
1.0 /	2.73E-01	(2.18E-02)	1.44E+00	(5.85E-02)	1.82E+00	(5.63E-02)	2.09E+00	(6.03E-02)	2.43E+00	(6.50E-02)	2.46E+00	(6.54E-02)	2.56E+00	(6.67E-02)	2.49E+00	(6.59E-02)	2.41E+00	(6.40E-02)	2.37E+00	(6.43E-02)
2.0 /	2.50E+00	(6.61E-02)	2.29E+00	(6.37E-02)	2.19E+00	(6.10E-02)	2.20E+00	(6.19E-02)	2.40E+00	(6.47E-02)	2.19E+00	(6.10E-02)	1.89E+00	(5.75E-02)	1.82E+00	(5.65E-02)	2.01E+00	(5.91E-02)	2.20E+00	(6.31E-02)
3.0 /	2.54E+00	(6.69E-02)	2.66E+00	(6.73E-02)	2.65E+00	(6.79E-02)	1.85E+00	(5.80E-02)	1.59E+00	(5.27E-02)	1.41E+00	(4.94E-02)	1.34E+00	(4.03E-02)	1.21E+00	(4.50E-02)	1.07E+00	(4.31E-02)	1.09E+00	(4.34E-02)
4.0 /	1.02E+00	(4.21E-02)	1.11E+00	(4.38E-02)	1.31E+00	(4.77E-02)	2.46E+00	(6.54E-02)	7.14E+00	(1.12E-01)	8.31E+00	(1.20E-01)	2.03E+00	(7.01E-02)	1.53E+00	(5.16E-02)	1.01E+00	(4.19E-02)	7.24E-01	(3.55E-02)
5.0 /	1.75E-01	(2.35E-02)	2.73E-01	(2.10E-02)	2.59E-01	(2.09E-02)	2.19E-01	(1.95E-02)	3.24E-01	(2.37E-02)	1.13E+00	(4.44E-02)	1.12E+00	(4.40E-02)	2.64E-01	(2.15E-02)	6.55E-02	(1.07E-02)	4.15E-02	(8.49E-03)
6.0 /	4.09E-02	(9.21E-03)	2.73E-01	(2.10E-02)	2.74E+00	(4.92E-02)	6.67E+00	(1.00E-01)	2.36E+00	(6.41E-02)	1.17E-01	(1.43E-02)	3.42E-02	(7.71E-03)	3.60E-02	(7.99E-03)	3.59E-02	(7.99E-03)	2.29E-02	(6.30E-03)
7.0 /	1.92E-02	(5.70E-03)	4.09E-02	(1.03E-02)	5.54E-02	(9.03E-03)	6.17E-02	(1.04E-02)	8.42E-01	(3.02E-02)	6.04E+00	(1.03E-01)	4.74E+00	(9.08E-02)	7.17E-01	(3.53E-02)	6.35E+00	(1.05E-01)	2.02E+01	(1.07E-01)
8.0 /	5.33E+00	(9.64E-02)	2.29E-01	(1.99E-02)	6.67E-02	(1.00E-02)	2.74E-02	(6.93E-03)	4.11E-02	(8.44E-03)	2.22E-02	(6.21E-03)	2.79E-02	(6.96E-03)	9.72E-03	(4.11E-03)	8.68E-03	(3.00E-03)	8.50E-03	(3.86E-03)
9.0 /	1.65E-02	(5.36E-03)	1.31E-02	(4.77E-03)	5.64E-03	(3.13E-03)	1.17E-02	(4.52E-03)	1.00E-02	(4.34E-03)	1.55E-02	(4.04E-03)	3.47E-03	(2.45E-03)	7.90E-03	(3.70E-03)	2.97E-02	(7.10E-03)	3.31E-01	(2.40E-02)
10.0 /	1.32E+00	(4.70E-02)	6.58E-01	(3.33E-02)	4.94E-02	(9.26E-03)	4.74E-02	(9.07E-03)	2.64E-02	(6.77E-03)	4.71E-02	(9.04E-03)	3.00E-02	(8.21E-03)	2.11E-01	(1.91E-02)	2.14E+00	(6.09E-02)	5.02E+00	(1.81E-01)
11.0 /	1.67E+00	(5.39E-02)	6.49E-02	(1.04E-02)	3.34E-02	(7.61E-03)	2.31E-02	(4.33E-03)	6.77E-03	(3.42E-03)	7.39E-03	(3.50E-03)	2.10E-03	(1.95E-03)	1.00E-03	(1.37E-03)	1.00E-02	(4.18E-03)	2.37E-03	(2.03E-03)