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Elastic and Inelastic Scattering of Fast Neutrons from ⁶Li and ⁷Li



by

John C. Hopkins D. M. Drake H. Condé

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ELASTIC AND INELASTIC SCATTERING OF FAST NEUTRONS FROM ⁶Li AND ⁷Li

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John C. Hopkins, D. M. Drake, and H. Condé

ABSTRACT

The differential elastic and inelastic neutron scattering cross sections of ⁶Li and ⁷Li have been measured at incident neutron energies of 4.83, 5.74, and 7.5 MeV for ⁶Li and at energies of 3.35, 4.83, 5.74, and 75. MeV for ⁷Li. Scattered neutrons and gamma rays were observed independently. The cross sections were measured with a neutron time-of-flight spectrometer relative to the well-known cross section for neutron scattering from hydrogen. The gamma-ray spectra were measured with a NaI(T1) spectrometer using time-of-flight techniques to eliminate the neutron background. The 2.184-MeV state in ⁶Li was excited by neutron inelastic scattering. The 3.56-MeV state in ⁶Li was not observed in either the neutron or gamma-ray studies. Scattered neutrons from the 0.478-MeV state in ⁷Li were resolved at both 3.35 and 4.83 MeV. Scattered neutrons from the 4.63-MeV state in ⁷Li were observed at incident neutron energies of 5.74 and 7.5 MeV. A continuum of neutrons due to three-particle breakup was observed for both ⁶Li and ⁷Li at 4.83, 5.74, and 7.5 MeV.

1. INTRODUCTION

Differential elastic and inelastic neutron scattering cross sections of ${}^{6}Li$ and ${}^{7}Li$ have been measured using the Los Alamos Scientific Laboratory high resolution, time-of-flight fast-neutron and gamma-ray spectrometers. The differential cross sections have been measured with incident neutron energies of 4.83, 5.74, and 7.5 MeV for ${}^{6}Li$ and 3.35, 4.83, 5.74, and 7.5 MeV for ${}^{7}Li$.

The elastic, and a portion of the inelastic, scattering cross sections have been measured previously. (1-5) Discrepancies among the various results, (4) the need for more data, and concern with the spectrum of neutrons from the three-body breakup have created a further interest in these measurements.

2. EXPERIMENTAL PROCEDURE

The Los Alamos Scientific Laboratory time-offlight facility used a 2-MHz chopped beam from the 8-MV Van de Graaff accelerator. A Mobley magnet system was employed to compress the 10-nsec chopped beam to less than 1 nsec. The $T(p,n)^{3}$ He source reaction was used for neutrons of less than 5-MeV energy, and the $D(d,n)^{3}$ He reaction for those above 5 MeV. Gas targets, 3-cm long, with 5.69-mg/cm² or 10.45-mg/cm² molybdenum entrance windows were used. The gas pressures were 3 atm. The neutron energy spreads were 62, 47, 230, and 170 keV for incident neutron energies of 3.35, 4.83, 5.74, and 7.5 MeV, respectively. The convergence of the charged particle beam, due to the sweeping action of the Mobley buncher, was $\pm 2.5^{\circ}$. The scattering samples were right-circular cylinders placed 8.7 cm from the center of the gas target at zero degrees to the incident beam direction. The lithium samples were separated isotopes (purity >99%), 2-cm diam by 2.54-cm long. The samples were canned in thin aluminum containers. Empty aluminum containers were used for background measurements. The neutron cross sections were measured relative to the 1 H(n,n) scattering cross section using a cylindrical sample of polyethylene, 0.51-cm diam by 1.9-cm long.

Scattered neutrons were detected in a wellshielded plastic scintillator, 12.7-cm diam by 2.5cm thick. The flight path was 2.3 m. A single Amperex 58 AVP photomultiplier tube viewed the NELO2A plastic scintillator.

Cyclic series of four separate runs--lithium sample, empty-can background, polyethylene, and background with no sample or can--were made at the forward angles. The runs with polyethylene were not made at backward angles. All runs were normalized to equal numbers of target neutrons, as recorded by a monitor counter.

The gamma-ray spectrometer and its use have been described by Condé et al. (6)

3. DATA ANALYSIS

Typical neutron time spectra with backgrounds subtracted are shown in Fig. 1 for neutrons scattered by ⁷Li, ⁶Li, and polyethylene (CH₂), all at 7.5 MeV, at a laboratory angle of 55°. As usual with time spectra, time increases to the left and, consequently, energy increases to the right. The data were processed with a computer code to produce energy spectra, examples of which are shown in Fig. 2 for ⁰Li at an incident neutron energy of 4.83 MeV. (Other energy spectra are given in tabular and graphical form in the Appendices.) The elastic peaks, however, have been omitted. The appropriate extrapolation has been made to zero energy from the cut-off energy of approximately 400 keV. The cutoff energy is higher than the detector bias, which is approximately 250 keV, because the efficiency is very small and uncertain in the region immediately above the bias. The cut-off energies were selected after the data were obtained and include the significant data points of lowest energy.

By knowing the number of atoms in the samples, the ${}^{l}H(n,n)$ scattering cross section, and the num-



Fig. 1. Typical neutron time spectra with background subtracted for ⁷Li, ⁶Li, and CH₂.

ber of neutrons scattered into each time or energy interval, we could determine the cross sections. The relative sensitivity of the neutron detector for neutrons of various energies was determined by mea-



Fig. 2. Energy spectra of neutrons inelastically scattered from ${}^{6}\text{Li}$ at an incident neutron energy of 4.83 MeV. The dashed curves represent the distributions obtained from a three-body phase space calculation normalized to the total ${}^{6}\text{Li}(n,dn){}^{4}\text{He}$ cross section obtained in the present experiment.

suring the 1 H(n,n) differential elastic scattering cross section and assuming isotropy in the centerof-mass system, and by measuring the T(p,n)³He differential cross section and comparing these measurements with those of Wilson et al.,⁽⁷⁾ Perry et al.,⁽⁸⁾ and Goldberg et al.⁽⁹⁾ The relative sensitivity is shown in Fig. 3.

4. CORRECTIONS

4.1 <u>Corrections for the Asymmetry of the Elastic</u> <u>Peak</u>

Peaks in neutron time spectra are generally asymmetric, with a tail on the low energy side. The sources of these tails are discussed in some detail by Batchelor and Towle.⁽¹⁾ For this experiment, measurements were made of beam purity and of the effects of shadow bar placement and other nearby masses. The ⁶Li and ⁷Li spectra were plotted on semilog paper, and the elastic peaks were normalized and superimposed visually. In this way the ⁶Li peak shape was used to extrapolate the ⁷Li elastic tail under the first excited state at 0.478 MeV. The separation of the elastic peak from the first excited state peak in ⁶Li is large and did not require this correction.



Fig. 3. The relative efficiency or sensitivity of the neutron detector as a function of neutron energy. The values used were taken from the smooth curve through the data.

4.2 Flux Attenuation and Multiple Scattering

Corrections were made to both the polyethylene and lithium data for the effects of multiple scattering and attenuation. The recipe developed by Cranberg and Levin⁽¹⁰⁾ was used to check the more detailed Monte Carlo calculations made with the Aldermaston Maggie code.⁽¹¹⁾ Since only relative cross sections were measured, the lithium and polyethylene corrections tended to cancel each other. The samples were chosen to minimize the correction, and, for elastic scattering, the average correction factor was 1.04. For elastic scattering the agreement between the simple recipe and the Monte Carlo calculation was excellent.

4.3 Extrapolation Below the Neutron Bias

Figure 2 shows the energy spectra of inelastically scattered neutrons for ⁶Li at an incident neutron energy of 4.83 MeV. The standard deviations are based upon the consistency of the data, These errors are larger than the statistical uncertainties. The continuum data have been corrected for multiple scattering and attenuation. In this figure the peaks arising from inelastic scattering to the 2.18-MeV level and the elastic scattering tails have not been corrected. These correactions were applied separately. The neutrons appearing above the maximum energy for three-body breakup have experienced multiple elastic scatterings. This contribution was subtracted in the data reduction procedure. The experimental cross sections have been extrapolated from the cut-off energy, approximately 400 keV, to zero energy.

A production cross section for continuum neutrons, integrated over energy and angle, of 460 ± 40 mb was obtained. The dashed curves are the distributions obtained from a three-body phase space calculation⁽¹²⁾ normalized to the experimental value of the integrated ⁶Li(n,dn)⁴He cross section of 460 mb. The fact that there are too few high energy neutrons indicates that a substantial fraction of the continuum may be attributable to breakup in two stages, e.g., ⁶Li(n,d)⁵He with subsequent ⁵He breakup into $n + {}^{4}$ He. The extrapolations below the bias are based upon estimates of what the spectrum should be. A phase space calculation yields a spectrum going to zero cross section at zero energy, whereas a spectrum resulting from two-stage breakup could have a maximum at low energy.⁽¹⁾ For the present experiment the spectra were arbitrarily extrapolated to a zero energy value of about half the value at 500 keV. An uncertainty of ±38% was assigned to the cross sections below the bias of the spectra obtained at an incident energy of 4.83 MeV. At all higher energies an uncertainty of ±50% was assigned to the cross sections obtained from integration of the extrapolated curves.

5. RESULTS AND DISCUSSION

Tables I and II present the cross sections, integrated over angle, for the observed reactions. Complete tabulations of the differential cross sections and energy spēctra are contained in the Appendices.

Neutrons corresponding to elastic scattering, inelastic scattering to the 2.18-MeV level, and to a continuum are observed. The cross section for the excitation of the 3.56-MeV level is less than 5 mb. No de-excitation gamma radiation is observed. The upper limits for gamma-ray production cross sections for gamma rays of 2.18 and 3.56 MeV are 0.2 and 0.4 mb/sr, respectively, at 90° with an incident neutron energy of 4.83 MeV. The 2.18-MeV state decays by breakup into an alpha particle and a deuteron. Figure 4 shows the differential elastic scattering cross sections in the center-of-mass system. The data have been corrected for multiple scattering and attenuation. The minimum zerodegree elastic scattering cross section is given

by Wick's limit, $\sigma_{W} = \frac{k^2 \sigma_{T}^2}{(4\pi)^2}$, in terms of the total cross section and the neutron wave number in the center-of-mass system. These lower limits are shown in Fig. 4.

Figure 5 shows the total cross section for ⁶Li versus incident neutron energy. The curve represents the recent data of Foster and Glasgow at the Battelle Northwest Laboratory.⁽¹⁴⁾ The data points

	4.83 MeV	5.74 MeV	7.5 MeV
l Elastic	1350 ± 60	1280 ± 51	1190 ± 48
2 Inelastic to 2.18-MeV level	210 ± 13	170 ± 17	150 ± 15
3 Inelastic to continuum	460 ± 40	480 ± 48	570 ± 57
Total 6 Li(n,nd) ⁴ He Sum of 2 and 3	670 ± 42	650 ± 51	720 ± 59
4 ⁶ Li(n,p) ⁶ He (Ref. 4,13)	18 ± 2	18 ± 2	15 ± 2
5 ⁶ Li(n,α)T (Ref. 4,13)	86 ± 5	71 ± 5	53 ± 5
Total cross section Sum of 1, 2, 3, 4, and 5	2120 ± 70	2020 ± 72	1980 ± 76
Total measured (Ref. 14)	2086 ± 25	2040 ± 30	1893 ± 32

TABLE I. FAST NEUTRON CROSS SECTIONS (IN mb) FOR ^bLi

	3.35 MeV	4.83 MeV	5.74 MeV	7.5 MeV
l Elastic	1860 ± 52	2230 ± 89		
2 Inelastic to 0.48-MeV level	240 ± 20	180 ± 14	17 7 0 * 71	1520 ± 61
3 Inelastic to 4.63-MeV level			110 ± 17	120 ± 12
4 Inelastic to continuum		100 ± 22	220 ± 34	310 ± 37
Total ⁷ Li(n,Tn) ⁴ He Sum of 3 and 4		100 ± 22	330 ± 38	430 ± 39
Total cross section	2100 ± 56	2510 ± 93	2100 ± 81	1950 ± 72
Total measured (Ref. 14)	2066 ± 28	2425 ± 30	2200 ± 34	1840 ± 30

TABLE II. FAST NEUTRON CROSS SECTIONS (IN mb) FOR 7Li

represent the sums of neutron and charged-particle partial cross sections. The solid circles indicate the values derived from the present experiment; the square, a 10-MeV datum of Cookson et al. at Aldermaston;⁽⁵⁾ and the diamonds, the data of Batchelor and Towle at Aldermaston.⁽¹⁾ These three groups measured the neutron partial cross section. Figure 6 shows the integrated elastic scattering cross section as a function of incident neutron energy. The absolute standard deviations are shown if they are larger than the spots. A straight line yields a satisfactory fit to the data.

Figure 7 shows the ⁶Li(n,dn)⁴He cross section as a function of incident neutron energy. The curve is the total cross section minus the elastic scattering cross section as obtained from the curves of Figs, 4 and 5. The results of Batchelor and Towle, ⁽¹⁾ Rosen and Stewart, ⁽²⁾ Cookson et al., ⁽⁵⁾ and of the present experiment are illustrated with diamonds, open circles, a square, and solid circles, respectively. If the 6 Li(n,2n) cross section is negligible, as has been assumed, $\binom{4}{4}$ then there is a systematic discrepancy between the Rosen and Stewart results for ⁶Li and all other results.⁽⁴⁾ The discrepancy does not appear to be a multiplicative factor as first suggested by Pendlebury.⁽⁴⁾ One source of the disparity in the results may be neutron production by charged-particle reactions. For example, all neutrons produced by the reactions

 6 Li(n,dn)⁴He followed by 6 Li(d,n)⁷Be would be attributed to the 6 Li(n,dn)⁴He reaction in experiments such as this one that detect neutrons.

5.2 ⁷Li

Neutrons corresponding to elastic scattering and inelastic scattering to the first excited state at 0.478 MeV, to the second excited state at 4,63 MeV, and to a continuum were observed. The first excited state at 0.478 MeV decays only by gamma-ray emission. This transition is from a 1/2-state to the 3/2-ground state, and, therefore, the gamma-ray angular distribution is isotropic. The gamma-ray production cross sections are 230 ± 20 mb and 320 * 24 mb for incident neutron energies of 5.74 and 7.5 MeV, respectively. These values disagree with the only other measurements of these cross sections.⁽¹⁵⁾ The gamma-ray production cross sections were not measured for incident neutron energies of 3.35 or 4.83 MeV, but they are probably equivalent to the neutron excitation cross sections as reported in Table II. No other gamma radiation was observed. All inelastic scattering, except to the first excited state, results in three-body or sequential breakup of ⁷Li into a triton and an alpha particle.

Figure 8 shows the differential elastic cross sections in the center-of-mass system. The data have been corrected for multiple scattering and



Fig. 4. The differential neutron elastic scattering cross sections for ${}^{6}\text{Li}$ in the center-of-mass system. The curves are visual fits to the data. Note the discontinuities in the vertical scale.

attenuation. The curves are visual fits to the data. The 5.74- and 7.5-MeV data include the scattering to the first excited state at 0.478 MeV. The minimum zero-degree elastic scattering cross sections, Wick's Limits, are also shown.

Figure 9 shows the total cross section for ⁷Li. The line represents the data of Foster and Glasgow; (14) the solid circles, the present measurements; the diamonds, the data of Batchelor and Towle; (1) and the square, a 10-MeV datum by Cookson et al. (5)

Figure 10 shows the cross sections for elastic



Fig. 5. Total cross sections for ^{6}Li versus incident neutron energy.



Fig. 6. The integrated elastic scattering cross section for 6 Li as a function of incident neutron energy.

scattering plus scattering to the first excited state as a function of incident neutron energy. The curve is a fit to the data, consistent with the total and inelastic scattering cross sections. The solid circles represent the results of the present experiment. The data of Batchelor and



Fig. 7. The ${}^{6}Li(n,dn)^{4}He$ cross section as a function of incident neutron energy.

Towle⁽¹⁾ and of Cookson et al.⁽⁵⁾ are shown as diamonds and a square, respectively.

Figure 11 shows the ${}^{7}\text{Li}(n,tn)^{4}\text{He}$ cross section as a function of incident neutron energy. The curve is the total cross section minus the cross sections for elastic scattering and inelastic scattering to the 0.478-MeV state as determined from the curves of Figs. 9 and 10. The solid circles display the data from the present experiment. The results of Cookson et al., ${}^{(5)}$ Batchelor et al., ${}^{(1)}$ Rosen et al., ${}^{(2)}$ Brown et al., ${}^{(16)}$ and Wyman et al. ${}^{(17)}$ are shown as a square, diamonds, open circles, triangles, and inverted triangles, respectively.

The data of the present experiment are consistent with the total cross sections obtained by Foster and Glasgow, (14) Some degree of evaluation was done in that the curves drawn on the graphs of the excitation functions for the partial cross sections were chosen to be best fits to the available



Fig. 8. The differential neutron elastic scattering cross sections for ^{7}Li in the center-of-mass system. The 5.74- and 7.5-MeV data include the scattering to the first excited state at 0.478 MeV.

experimental data which were consistent with the total cross section. These excitation functions are given in Tables III and IV for 6 Li and 7 Li, respectively.



Fig. 9. Total cross sections for ⁷Li versus incident neutron energy.



Fig. 10. The 7 Li cross sections for elastic scattering plus scattering to the first excited state, as a function of incident neutron energy.



Fig. 11. The 7 Li(n,tn)⁴He cross section as a function of the incident neutron energy.

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			1		1	
E _n ,MeV	^σ Total	^o Elastic	σ _{n,p}	σ n,α	σ_+σ_a) n,2n ⁺ n,n'γ	σ _{n,dn} b)
4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5	2130 2108 2100 2025 2020 1970 1920 1900 1850 1855 1785 1730	1369 1340 1310 1281 1252 1225 1198 1164 1140 1111 1082 1055	n,p 15 18 19 19 18 17 16 15 14 13 13 12	n,a 108 95 84 75 68 61 56 56 52 48 48 45 42 40	n,2n n,n Y 0 2 2 2 3 4 9 13 21 29 35	638 655 685 648 680 664 646 660 635 635 619 588
9.5 10,0	17 30 1680	1055 1030	12 11	40 38	35 44	588 557

TABLE III. ⁶Li EVALUATED CROSS SECTIONS (mb)

 $\sigma_{n,dn} = \sigma_{Total} - \sigma_{Elastic} - \sigma_{np} - \sigma_{n\alpha} - \sigma_{n,2n} - \sigma_{n,n'\gamma}$ σ_{T} From Reference 14.

a) These values were obtained from Reference 4.

b) The fluctuations in the $\sigma_{n,dn}$ reflect the fluctuations in σ_{Total} . The curve in Fig. 7 is smoothed, with the assumption that these fluctuations are not significant.

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E _n ,MeV	^d Total	Elastic $+ \sigma_{0,48-MeV}$ level	^σ n,tn
3.0 3.5 4.0 5.0 5.5 6.0 6.5 7.5 8.0 9.5 9.0 9.5	2040 2104 2342 2516 2340 2080 2110 2012 1923 1862 1816 1773 1740 1720 1665	2040 2104 2327 2471 2200 1770 1750 1627 1518 1450 1401 1359 1328 1312 1261	0 4 15 45 140 310 360 385 405 412 415 414 412 408 404
	5]	

TABLE IV. 7Li EVALUATED CROSS SECTIONS (mb)

 $\sigma_{n,tn} = \sigma_{Total} - \sigma_{Elastic} - \sigma_{0.48-MeV level}$

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APPENDIX A

CROSS-SECTION DATA

The cross-section data are given for each isotope of Li at each energy. Cross sections for discrete peaks are given in the center-of-mass system, while cross sections for the continuum neutrons are given in the laboratory system.

The energy spectra are intended only to show the continuum neutrons. The cross sections for the discrete peaks given in the energy spectra have not been corrected for multiple scattering or attenuation. The cross sections for the discrete peaks are given separately and have been corrected properly. The standard deviations for the energy spectra were obtained from the consistency of the data for an incident neutron energy of 4.83 MeV. Statistical errors were used for the energy spectra taken with incident neutron energies of 5.74 and 7.5 MeV.

TABLE	Al.	MAXIMUM	ENERGY	OF C	ONTINUUM	NEUTRONS	AS	A FUNCT	[CN
	OF	LABORATOR	Y ANGLE	AND	INCIDENT	NEUTRON	ENE	RGY	

		6 Li(Q =	-1.47 MeV)	1	$7_{\text{Li}}(q =$	-2.57 MeV)
θ _{τ.AB}	Incide	ent Energy	/ in MeV	Incid	lent Energ	gy in MeV
Degrees	4.83	5.74	7.5	4.83	5.74	7.5
30	3,12	4,03	5.72	2.05	2.95	4,65
39	3.01	3.89	5,52	1.97	2,84	4.50
40	3,00	3.87	5.50	1.96	2.83	4,48
47	2,90	3.74	5.32	1.89	2.73	4.35
55	2.77	3, 58	5.11	1.79	2.61	4.17
72.5	2.48	3.20	4.59	1.58	2.33	3.77
90	2.18	2.83	4.09	1.37	2.05	3.37
110	1.87	2.46	3,58	1.17	1.78	2.96
134	1.61	2.13	3.12	0.99	1.53	2.60
135	1.60	2,12	3.11	0.98	1.53	2,59

C • • • • • •	CLASIIN SCALLE	RING 3.35 MEV LASL 66	
ALL CROSS	SECTIONS IN MI	LLIEARNS PER STERADIAN OR MILLIBARNS TO	TAL
VISUAL FIT	CENTER OF MAS	S SYSTEM	
C	+1.u	356.0	
	+0.9	303.0	
	+0.8	259.0	
	+0.7		
	+0	155-0	
	+0.4	133.0	
	+0.3	115.0	
	+0•2 +0 1		
	+0.1	83.9	
	-C•1	80.3	
	-0.2	79.4	
	-0.4	80.2 83.4	
	- G • 5	92.9	
	-0.5	110.3	
	-13.7 _7 6		
	-C.S	202.0	
	-1.0	252.0	
	SCATTERING DATA	CENTER OF MASS LI 7 3-73MEV LASL	4.E
CUS UMEGA	C.M.	RELATIVE APSOLUTE	
+0.703	219.0	4.5 9.0	
+0.473	150.0	3.0 6.0	
+0.167	94•0 97		
-0.466	80 87	2.0 4.0	
-C.775	154	5.5 7.0	
INTEGRATS	D CRESS SECTION	1863 PLUS OR MINUS 52 MILLIBARNS	
LITHIUM 7	INELASTEC SCATT	ERING TO 0.478MEV LEVEL 3.35MEV LASE 64	2
COS OMEGA	SIGMA CMEGA	STANDARC CEVIATIONS	-
C M			
+0-697	C • M •	RELATIVE ABSOLUTE	
+ C • 697 + C • 65	C•M• 22•0 17•2	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3	
+0.697 +0.463 +0.155	C • M • 2 Z • O 1 7 • 2 1 4 • 7	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1	
+0.697 +0.463 +0.155 -0.156	C.M. 22.0 17.2 14.7 16.8	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3	
+ C • 697 + C • 697 + C • 463 + C • 155 - C • 156 - C • 477 - C • 782	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.6	
+ C.697 + C.697 + C.155 - C.156 - C.477 - C.477 - C.782 1 NTEGRATER	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRCSS SECTION	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.6 24Z PLUS OR MINUS 20 MILLIBARNS	
+ C.697 + C.697 + C.463 + C.155 - C.156 - C.477 - C.477 - C.782 INTEGRATIS VISUAL FIT	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRCSS SECTION CENTER OF MASS	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.6 24Z PLUS OR MINUS 20 MILLIBARNS SYSTEM	
+ C.697 + C.697 + C.463 + C.155 - C.156 - C.477 - C.782 INTEGRATER VISUAL FIT COS OMEGA + 1.0	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRUSS SECTION CRUSS SECTION CENTER OF MASS SIGMA CMEGA 22.2	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.6 24Z PLUS OR MINUS 20 MILLIBARNS SYSTEM	
+ C.697 + C.697 + C.463 + C.155 - C.156 - C.477 - C.782 INTEGRATTR VISUAL FIT COS OMEGA + 1.0 + 0.9	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRCSS SECTION CENTER OF MASS SIGMA GMEGA 23.2 23.0	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.6 24Z PLUS OR MINUS 20 MILLIBARNS SYSTEM	
+ C.697 + C.697 + C.463 + C.155 - C.156 - C.477 - C.782 INTEGRAITER VISUAL FIT COS OMEGA + 1.0 + 0.9 + C.8	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRESS SECTION CENTER OF MASS SIGMA GMEGA 23.2 25.0 22.5	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.6 24Z PLUS OR MINUS 20 MILLIBARNS SYSTEM	
+ C.697 + C.697 + C.463 + C.155 - C.156 - C.477 - C.782 INTEGRATTR VISUAL FIT COS OMEGA + 1.0 + C.8 + 0.7 + C.8	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRESS SECTION CENTER OF MASS SIGMA GMEGA 23.2 23.0 22.5 21.5	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.6 24Z PLUS OR MINUS 20 MILLIBARNS SYSTEM	
+ 0.697 + 0.463 + 0.155 - 0.156 - 0.477 - 0.782 INTEGRATTR VISUAL FIT COS OMEGA + 1.0 + 0.9 + 0.8 + 0.7 + 0.6 + 0.5	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRESS SECTION CENTER OF MASS SIGMA GMEGA 23.2 23.0 22.5 21.5 21.5 21.0 18.5	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.6 Z4Z PLUS OR MINUS 20 MILLIBARNS SYSTEM	
+ C.697 + C.697 + C.463 + C.155 - C.156 - C.477 - C.782 INTEGRATION VISUAL FIT COS OMEGA + 1.0 + 0.9 + C.8 + 0.7 + C.6 + C.5 + 0.4	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRCSS SECTION CENTER OF MASS SIGMA GMEGA 23.2 25.0 22.5 21.5 21.5 21.0 18.5 17.0	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.4 24Z PLUS OR MINUS 20 MILLIBARNS SYSTEM	
+ C.697 + C.697 + C.463 + C.155 - C.156 - C.477 - C.782 INTEGRATTR VISUAL FIT COS OMEGA + 1.0 + 0.9 + C.8 + 0.7 + C.6 + C.5 + 0.4 + C.3	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRCSS SECTION CENTER OF MASS SIGMA GMEGA 23.2 25.0 22.5 21.5 21.5 21.5 21.0 18.5 17.0 16.0	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.4 24Z PLUS OR MINUS 20 MILLIBARNS SYSTEM	
+ C.697 + C.697 + C.463 + C.155 - C.156 - C.477 - C.782 INTEGRATTR VISUAL FIT COS OMEGA + 1.0 + O.9 + C.8 + O.7 + C.6 + C.5 + O.4 + C.3 + O.2 + C.1	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRESS SECTION CENTER OF MASS SIGMA CMEGA 23.2 25.0 22.5 21.5 21.5 21.5 21.5 17.0 16.0 15.5	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.4 24Z PLUS OR MINUS 20 MILLIBARNS SYSTEM	
+ C.697 + C.697 + C.697 + C.463 + C.155 - C.156 - C.477 - C.782 INTEGRATTR VISUAL FIT COS OMEGA + 1.0 + C.9 + C.8 + 0.7 + C.6 + C.5 + C.4 + C.3 + C.2 + C.1 + C.0	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRUSS SECTION CENTER OF MASS SIGMA CMEGA 23.2 23.0 22.5 21.5 21.5 21.5 21.5 17.0 16.0 15.5 15.6 16.0	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.4 Z4Z PLUS OR MINUS 20 MILLIBARNS SYSTEM	
+ C.697 + C.697 + C.697 + C.463 + C.155 - C.156 - C.477 - C.782 INTEGRATTR VISUAL FIT COS OMEGA + 1.0 + C.9 + C.8 + C.7 + C.6 + C.5 + C.4 + C.3 + C.1 + C.1 + C.0 - C.1	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRCSS SECTION CENTER OF MASS SIGMA CMEGA 23.2 23.0 22.5 21.5 21.5 21.5 21.5 21.5 21.5 17.0 16.0 15.5 15.6 14.0 16.8	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.4 Z4Z PLUS OR MINUS 20 MILLIBARNS SYSTEM	
+ C.697 + C.697 + C.697 + C.463 + C.155 - C.156 - C.477 - C.782 INTEGRATTR VISUAL FIT CDS OMEGA + I.C + C.9 + C.8 + C.7 + C.6 + C.5 + C.4 + C.4	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRCSS SECTION CENTER OF MASS SIGMA GMEGA 23.2 23.0 22.5 21.5 21.5 21.5 21.5 21.5 21.6 16.0 16.8 17.0 16.0 16.8 17.6	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.6 Z4Z PLUS OR MINUS 20 MILLIBARNS SYSTEM	
+ C.697 + C.697 + C.697 + C.463 + C.155 - C.156 - C.477 - C.782 INTEGRATTR VISUAL FIT CDS OMEGA + 1.0 + C.9 + C.8 + C.7 + C.6 + C.5 + C.4 + C.3 + C.2 + C.1 + C.2 - C.2 - C.3 - C.4	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRCSS SECTION CENTER OF MASS SIGMA GMEGA 23.2 23.0 22.5 21.5 27.0 18.5 17.0 16.0 15.5 15.6 14.0 16.8 17.6 18.4 19.2	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.6 Z4Z PLUS OR MINUS 20 MILLIBARNS SYSTEM	
+ C.697 + C.697 + C.697 + C.463 + C.155 - C.176 - C.477 - C.782 INTEGRATTR VISUAL FIT COS OMEGA + 1.0 + C.9 + C.8 + 0.7 + C.6 + C.5 + C.4 + C.3 + C.2 + C.1 + C.1 + C.2 - C.3 - C.4 - C.2 - C.3 - C.4 - C.4 - C.477 - C.4777 - C.4777 - C.4777 - C.4777 - C.47777 - C.5777777777777777777777777777777777777	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRESS SECTION CENTER OF MASS SIGMA GMEGA 22.2 23.0 22.5 21.5 21.5 21.5 21.0 16.0 16.5 17.0 16.0 15.5 15.6 16.0 16.8 17.6 18.4 19.2 2C.0	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.6 24Z PLUS OR MINUS 20 MILLIBARNS SYSTEM	
+ C.697 + C.697 + C.697 + C.463 + C.155 - C.156 - C.477 - C.782 INTEGRATTR VISUAL FIT COS OMEGA + 1.0 + C.9 + C.8 + 0.7 + C.6 + C.3 + C.1 + C.1 + C.1 + C.1 + C.1 + C.1 + C.1 + C.2 + C.2	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRESS SECTION CENTER OF MASS SIGMA GMEGA 23.2 23.0 22.5 21.5 21.5 21.0 18.5 17.0 16.0 15.5 15.6 16.0 16.3 17.6 1.8.4 19.2 2C.0 2C.6 21.5	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.6 24Z PLUS OR MINUS 20 MILLIBARNS SYSTEM	
+ C.697 + C.697 + C.697 + C.463 + C.155 - C.156 - C.477 - C.782 INTEGRATTR VISUAL FIT COS OMEGA + 1.0 + C.9 + C.8 + O.7 + C.7 + C.8 + O.7 + C.8 + O.7 + C.8 + O.7 + C.8 + O.7 + C.8 + O.7 + C.8 + O.7 + O.7	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRESS SECTION CENTER OF MASS SIGMA GMEGA 23.2 23.0 22.5 21.5 21.5 21.0 18.5 17.0 16.0 15.5 15.6 16.0 16.8 17.6 1.8.4 19.2 2C.0 2C.6 21.1 21.5	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.6 24Z PLUS OR MINUS 20 MILLIBARNS SYSTEM	
+ C.697 + C.697 + C.697 + C.463 + C.155 - C.156 - C.477 - C.782 INTEGRATTR VISUAL FIT COS OMEGA + 1.0 + C.9 + C.8 + O.7 + C.9 + C.8 + O.7 + C.8 + O.7 + C.9 + C.8 + O.7 + C.9 + C.8 + O.7 + C.9 + C.8 + O.7 + O.9 + O.9 + C.8 + O.7 + O.9 + O.9	C.M. 22.0 17.2 14.7 16.8 2C.0 21.5 CRESS SECTION CENTER OF MASS SIGMA GMEGA 23.2 23.0 22.5 21.5 21.5 21.0 18.5 17.0 16.0 15.5 15.6 16.8 17.6 1.8.4 19.2 2C.0 2C.6 21.1 21.5 21.8	RELATIVE ABSOLUTE 0.5 1.7 0.4 1.3 1.0 1.1 0.4 1.3 0.5 1.5 0.4 1.6 24Z PLUS OR MINUS 20 MILLIBARNS SYSTEM	

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LITHIUM 6	ELASTIC SCATTER	ING 4.83MEV LOS ALAMOS 1966
ALL CROSS	SECTIONS IN MIL	LIEARNS PER STERADIAN OR MILLIBARNS TOTAL
VISUAL FIT	CENTER OF MASS	SYSTEM
С	USINE DMEGA	SIGMA DMEGA
	+1.0	508.0
	+0.9	271.0
	+0.8	275.0
	+0.7	203.0
	+11+5	152.0
	+0.7	115.0
	+1) • •	88.0
	+0	69•4
	+1J+2	26.5
	+0.1	48.1
	+6.6	4J•8
	-6•1	42.0
	-0.2	41.6
	-0.1	42.3
	-1/-4	44•L
	-9-5	46.N
	-0.4	50.0
	-0.,	50 F
	-1.0	
ELASTIC	CATTERING DATA	
	STORA ONECA	
	SIGMA CHEGA	DELATIVE ARSOLUTE
		A O B C
+0 454	195.0	2.5 5.0
+0 166	50 0	
-0 149	43.0	
-0 494	43.0	
-0 796		1.5 5-0
TNTECDATE	D CRESS SECTION	2 VIII DI VIII
INTEGRAT	D CA133 SECTION	1010 FE03 OK MINUS DO MIELIUARAS
	TAELASTIC SCATT	FRING TO 2-18 MEV LEVEL 4-E3MEV LASI 66
COS ONEGA	SIGNA OMEGA	STANDARE DEVIATIONS
C. M.	C - M-	RELATIVE ABSULUTE
+0.656	16-5	
+0.399	19-8	0.8 1.4
+0.072	13.4	1.3 2.0
-0.244	17.1	1.0 1.5
-0.549	14.3	1.0 1.5
-0.818	16.6	· 1.1 1.3
INTEGRATE	D CRESS SECTION	2CE PLUS OR MINUS 13 MILLIBARNS
VISUAL FI	T CENTER OF MASS	SYSTEM
COS UMEGA	SIGMA DHECA	
+1.0	12.9	·
+0.9	14.0	
+0.8	14.9	
+0.7	16.0	
+0.6	17.2	
+0.5	18.4	
+0.4	19.7	
+0.3	20.9	
+^.2	22.2	
+0.1	22.9	
0.0	22.2	
-0.1	20.4	
-r.2	13.8	
-0.3	17.2	
-0.4	15.6	
- C• 5	14.2	
-0.6	12.9	
-0.7	11.9	
-0.8	10.7	
-0.9	9.9	
-1.0	9.0	

SIGMA INFLASTIC CONTINUOUS NEUTRONS LIG 4.83 MEV LABORATERY SYSTEM LAB ANGLE UTAS SIGMA BELCW S.D. SIGMA ABOVE S.D. SUM S.D. 40 DEG 0.4MEV 55 DEG 0.4MEV 10.2 49.8 3.5 60.0 3.4 1.9 48.3 11.3 3.8 2.9 59.6 4.7 72.50EG 0.4MEV 5.0 12.6 39.4 52.0 4.1 3.0 90 DEG 0.4*EV 110 DEG 0.4*EV 3.1 29.6 2.9 9.4 39.0 4.? 19.7 ֥1 3.0 1.1 16.7 5.0 175 DEG 0.4MEV 2.1 1.2 10.8 5.6 12.9 ⊷ • 7 S.D. STANDARD DEVIATIONS ARE RELATIVE. TO OBTAIN ABSOLUTE S.D. ADD BY SQUARES 3-4PERCENT. THIS EFFECTS SMALL ANGLE SIGMAS ONLY. INTEGRATED CRCSS SECTION 461 PLUS OR MINUS 40 MILLIBARNS FOR SUM VISUAL FIT LIG CONTINUUM 4.83 MEV ALL CONTINUOUS NEUTRONS COS THETA LAB SIGMA THETA LAB 61.2 +1.0 +0**.**8 61.2 +0.6 60.C +0.4 55.4 +0.2 47.6 0.0 36.8 -0.2 25.5 -0.4 18.0 -0.6 14.5 -0.2 11.9 -1.0

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LI 6	∽ 0	CEG 4.	83MEV	C	ONTINU	JOUS NEUTRON	5	
E 4VG		UN/CE AVG	S.O.	AVG	FROM	CONSISTENCY	0F	DATA
0.425		-18.11			1.0			
0.500		31.1			6.0			
0.600		26.3			9.0			
0.701		22.5			1.0			
0.805		28.Z			5.0			
0.908		28.2			1.0			
1.008		29.2			10.0			
1.109		26.=			4.0			
1.212		24.5			5.0			
1.315		.4.5			1.0			
1.416		26.2			3.0			
1.519		22.t			1.0			
1.024		22.6			1.6			
1.719		35.4			7.0			
1 • 82 2		20.7			2.0			
1.934		24.5			1.0			
2 • 02 9		.29.2			1.0			
2.151		-6.5			6.0			
2.240		96.9			L8.0			
2.342		69.6			C•3			
2.431		19•1			7.0			
2.526		11.3			1.0			
2.647		7.5			1.0			
2.755		6.G			$1 \cdot 6$			
2.846		7.5			1.0			
2.942		8.÷			1.0			
2.042		7≝			$1 \cdot 0$			
3.148		8.5			1.0			

LI 6	55	CEG	4.83MEV		suo	NEUTRON	s	
E AVG		ON/CE AV	C S.C. AV	G FROM	CONS	ISTENCY	OF	DATA
0.42	5	22.6	6.0					
0.50	0	27.3	5.0	•				
0.60	0	29.2	3.0					
0.70	1	28.2	3.0					
0.80	5	27.3	1.0					
0.90	e.	28.2	2.0					
1.00	6	27.3	1.0					
1.10	9	27.2	2•0					
1.21	2	30.1	I.0					
1.71	5	28.2	1.0					
1.41	6	30.1	2.0					
1.51	9	263	1.0					
1.62	4	25.4	1.0					
1.71	9	25.4	1.0					
1.82	2	32.9	2.0					
1.93	4	64•0	1.0					
2.02	9	102.6	2.0					
2.13	1	73.4	2.0					
2.24	0	16.0	1.0					
2.34	2	6.6	1.0					
2.43	1	4.7	1.0					
2.52	6	5.4	1.0					
2.64	7	5.eti	1.0					
2.75	5	5.r.	1.0					
2.84	6	5.0	1.0					

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LI 6 7	2•% CEG	4.83MEV CO	CNTINUQUS	NEUTRONS	
EAVG	DN/CE AVO	S.D. AVG	FROM CON	SISTENCY OF	ΝΔΤΔ
0.425	46.1	6.0			
0.500	40.5	4.0		•	
0.600	₿ 2. 0	1.0			
0.700	-2.0	2.0			
0.804	20.1	6.0			
0.904	22.(•	1.0			
1.002	30.1	3.0			
1.106	2.0	3.0			
1.208	23.5	3.0			
1.312	22.6	5.0			
1.414	20.7	ち•0			
1.511	20.7	ē₊ú			
1.618	29.5	4.0			
1.727	62.8	3.0			
1.824	5 8 6	11.0			
1.918	28.2	1.0			
2.020	5.6	1.0			
2.129	3.H	2.0			
2.232	0.0	1.0			
2.327	2.8	1.0			
2.428	1.9	2.0			
2.535	0.0	Z.0			

LI 6 90	CEG 4	•83MEV	CONT INUOUS	NEUTRONS
E AVG	ON/CE AVG	S.O. AV	/G	
0.425	22.2	12.8	3	
0.500	15.0	6.6	b	
0.600	23.1	5.0)	
0.701	25.6	4.3	3	
0.805	29.2	3.0	b .	
0.908	22.4	3.4	÷	
1.008	19.9	3.2	2	
1.109	21.0	3.0)	
1.212	25.6	2.9)	
1.315	22.0	2.9)	
1.416	44.6	3.3	3	
1.519	77.0	3.6	b	
1.624	41.1	3.1	L	
1.719	10.0	2.1	1	
1.822	4.3	2.1	L	
1.934	4.6	2.1	L	
2.029	2.9	2.4	÷	
2.131	3.7	2.1	L	
2.240	5.2	2.3	3	
2.342	4.4	2.3	3	

LI	6	110	C E G	4.8	3MEV	CONTINUOUS	NEUTRONS
Е	AVG		ON/CE	AVG	S.D. AV	/ G	
	0.42	25	13.	4	12.9	9	
	0.5	00	12.	6	6.7	7	
	0.60	00	20.	8	5.2	2	
	0.7	01	16.	6	4.3	3	
	0.8	05	żΟ.	.5	3.6	5	
	0.9	- 80	18.	1	3.3	3	
	1.0	08	10.	,4	3•1	L	
	1.1	09	21.	6	2.9	9	
	1.2	12	45.	7	3.2	2	
	1.3	15	55.	,4	3.	÷	
	1.4	16	13.	.6	3.0	כ	
	1.5	19	5.	,4	2.	7	
	1.6	24	3.	2	2.	5	
	1.7	19	1.	2	2.	7	
	1.8	22	-0.	.2	Ξ.	?	
	1.9	34	4.	.9	2.4	4	
	2.0	29	1.	8	2.8	В	
	2.1	31	5,	.9	2.	F.	

LT 6 135	CEG 4	83MEV CONTINUOUS NEUTRONS	
E AVG	UN/CE AVG	S.D. AVG FRCM CONSISTENCY OF	DATA
0.425	-0.9	3.0	
0.500	9.4	13.0	
0.600	15.1	7.0	
0.701	12.2	6.0	
0.805	11.3	1.0	
0.908	14.1	10.0	
1.008	28.2	1.0	
1.109	33.9	4.0	
1.212	1.9	6.0	
1.315	0.9	1.0	
1.416	-12.2	7.0	
1.519	-3.8	£.0	
1.624	-2.8	2.0	

LITHI ALL C VISUA	UM 7 ELAS ROSS SECT L FIT CEN COSINE +1.0 +0.9 +0.8 +0.7 +0.6 +0.5 +0.4 +0.3 +6.2 +C.1 +0.0 -0.4 -0.5 -0.4 -0.5 -0.4 -0.5 -0.4 -0.5 -0.4 -0.5 -0.4 -0.5 -	TIC SCATTER IONS IN MIL TER CF MASS OMEGA	ING 4.83M LIBARNS PE SYSTEM SIGMA DMEG 734.0 525.0 374.0 263.0 186.0 133.0 99.8 82.9 78.7 82.0 87.8 95.1 102.5 110.9 119.7 130.0 142.0 154.0	EV LOS ALAMO R STERADIAN O	S 1966 R MILLIBARNS TOTAL
ELAST CDS DM C.M. +0.70 +0.47 +0.16 -0.14 -0.46 -0.77 INTEG	-0.7 -0.# -0.9 -1.0 IC SCATT EGA S 3 3 7 4 6 5 RATED CRC	ERING DATA IGMA DMEGA C•M• 267•0 122•0 79•0 98•0 128•0 128•0 163•0 SS SECTICN 2	154.0 166.0 178.0 190.0 CENTER OF STANC RELAT 6. 3. 2. 3. 4. 2225 PLUS	MASS LI7 4. MARC CEVIATION IVE ABSOLUT 5 13.0 0 6.0 5 5.0 0 8.0 0 8.0 5 9.0 OR MINUS 89	83 LASL66 IS E MILLIBARNS
LITHI COS OM (UM 7 INFL EGA S 6 8 6 3 9 9 RATED CRC L FIT ST	ASTIC SCATT IGMA DMEGA C.N. 12.7 15.4 18.7 14.1 13.9 8.5 SS SECTICN RAIGHT LINE	ERING TO O STANO RELAT O O 3 1 1 1 2 178 PLUS WITH SIGM	478MEV LEVEL DARC CEVIATION FIVE ABSC/LUI 6 4.3 9 1.5 1 5.1 3 2.1 3 2.2 0 3.3 0R MINUS 27 M A AVG OF 14.2	4.65MEV LASL45 NS TE MILL IBARNS MB PER SR
SIGMA LABOR LA8 A 40 55 72.5 90 110 135 S.D. ADD BY	INFLASTI ATDPY SYS NGLE BIA DEG 0.4M DEG 0.4M DEG 0.4M DEG 0.4M DEG 0.4M STANDARD SQUARES	C CCNTINUO TEM S SIGMA 8E EV 0.9 EV 1.3 EV 1.4 EV 1.6 EV 1.6 EV 2.3 DEVIATIONS 3.4 PERCENT	US NEUTRON LCW S.C. 0.5 0.6 0.7 0.6 0.8 1.2 ARE RELATI	S LI7 4.83 SIGMA A80VE S P.9 2 9.5 1 7.9 1 4.6 1 4.3 1 4.1 1 VE. TO OBTAIN	MEV •D. SUM S.D. •3 9.8 7.4 •9 10.8 2.0 •7 9.3 1.8 •7 5.8 1.8 •5 5.9 1.7 •6 6.4 2.0 ABSCLUTE S.D.

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INTEGRATED CRESS SECTION 97 PLUS OR MINUS 22 MILLIBARNS FOR SUM

LI 7	40	CEG	4.83MEV (CNTINU	JOUS NE	UTRON	S	
EAVG		ON/CE AVG	S.D. AV	S FROM	CONSIS	TENCY	OF	DATA
0.42		4.0	9.2					
0.50		-1.9	4.7					
0.60		8.1	3.7					
0.70		10.4	3.0					
0.80		6.7	2.6					
0.90		7.5	2.5					
1.00		7.7	2.3					
1.11		6.9	Z.1					
1.21		8.1	2.2					
1.31		5.1	1.9					
1.41		5.6	2.1					
1.51		8.1	1.9					
1.62		1.4	1.9					
1.73		2.3	2.0					
1.82		-0.4	ž.0					
1.92		-0.3	1.9					

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LT 7	55	CEG 4	4.83MEV C	INTINUOUS	NEUTRONS	
E AVG		DN/CE AVG	S.D. AVG	FRGM CONS	SISTEMCY OF	DATA
0.42		5.1	5.3			
0.50		9.0	2.7			
0.40		7.1	2.1			
0.70		11.7	1.8			
0.80		10.1	1.6			
0.90		6.8	1.6			•
1.00		11.9	1.4			
1.11		9.1	1.3			
1.21		6.5	1.3			
1.31		4.2	1.2			
1.41		6.4	1.2			
1.51		4.8	1.2			
1.52		1.8	1.2			
1.72		3.5	1.2			

LI	7	72.3	CEG	4.8 MEV	CC	INTIN	JOUS	NEUTRO	JNS	
E	AVG		UN/CE AVG	S.D.	AVG	FROM	CONS	SISTEN	CY OF	OATA
	0.42	2	8.0	-	7.5					
	0.50)	1.1		8.8					
	0.60)	12.4		2.8					
	0.70)	10.9		2.5					
	0.80)	10.3	:	2.1					
	0.90)	11.4	:	2.0					
	1.00)	5.6		1.9					
	1.11		7.0		L•7					
	1.21		3.9		1.7					
	1.31		4.2		1.6					
	1.41		4.7		1.7					
	1.51		-0.7		1.6					

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LÍ 7	90 CEG 4	.83MEV CONTINU	JOUS NEUTRONS	
E AVG	ON/CE AVG	S.O. AVG FROM	CONSISTENCY OF DAT	Α.
0.42	9.7	7.8		
0.50	1.3	3.9		
0.60	10.0	2.9		
0.70	12.0	2•4		
0.80	4.2	2.1		
0.90	0.2	1.9		
1.00	4.7	1.7		
1.11	0.1	1.6		
1.21	0.8	1.5	•	
1.31	-1.2	1.5		

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LI 7 110	CEG 4.	83MEV CONTINUOUS NEUTRONS
E AVG	DN/CE AVG	S.D. AVG FROM CONSISTENCY OF DATA
0.42		
0.50	15.2	4.3
0.60	7.7	3.4
0.70	9.8	2.7
0.80	6.5	2.2
0.90	5.0	2.0
1.00	2.9	1.9
1.11	0.8	1.7

LT 7 135	CEG 4.	83MEV CONT	INUDUS NEUTRONS	
E AVG	UN/CE AVG	S.U. AVG FR	CM CONSISTENCY OF	DATA
0.42				
0.50	8.6	4.0		
0.60	12.5	3.2		
0.70	8.4	. 2.7		
0.80	4.8	2.3		
0.90	2.0	2.1		

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LITHIUM 6 ALL CRCSS VISUAL FII (5 ELASTIC SC/ 5 SECTIONS IN 7 CENTER OF COSINE OMEG/ +1.0 +0.9 +0.8 +0.7 +0.6 +0.5 +0.2 +0.1 +0.0 -0.1 -0.2 -0.3 -0.4 -0.5 +0.5 +0.5 +0.5 +0.7 -0.2 -0.7 -0.8 -0.9 -0.7 -0.8 -0.9 -0.7 -0.8 -0.9 -0.1 -0.5 -0.	ATTERING 5 MILLIBARNS MASS SYSTE SIGMA 0 583 406 282 200 145 104 77 57 44 37 35 34 34 34 34 34 35 36 37 38 39 46	74 MEV PER STE MEGA 0 0 0 0 0 0 0 0 0 0 0 0 0	LOS ALAM RADIAN OR	DS 1967 MILLIBARNS	S TOTAL
ELASTIC CDS DMEGA	SCATTERING I SIGMA CI	ATA CENTER MEGA ST	UF MASS ANDARC C		5.74 MEV	
+0.821	307.0	κt	10.5	A850LUTE		
+0.706	204.0		7.0	10.0		
+0.587	141.0		6.4	8.5		
+0.456	89.3		4.3	5.4		
+0.144	40.4		2.2	2.8		
-0.16B	. 33.8		1.9	2.4		
-0.486	36.2		2.0	2.5		
	38.9 TEO LIASTIC		2.2		NIC 51 MTLL	TRADUC
INTEGRA		CRUSS SECTIO	JN 1275	PLUS UK MI	NUS SI MILL	I LAKNS
LITHIUM & COS DMEGA	5 INELASTIC S Signa D	SCATTERING TO 1EGA ST RE) 2.18 ME ANDARU U	V LEVEL EVIATIONS	LCS ALAMOS &	57 5.74 MEN
+0.804	15.9		1.5	1.6		
+0.680	15.9		1.5	1.6		
+0.552	15.2		1.4	1.5		
+0.413	17.1		1.6	1.7		
+0.089	15.1		1.4	1.5		
-0.5%3	12•7		1.0	1.5		
-0-802	9.6		0.9	1.0		
INTEGRAT	TED CROSS S	CTION 170 P	LUS OR M	INUS 17 M	ILLIBARNS	
VISUAL P	FIT CENTER	OF MASS SYSTE	M			
COS OMEGA	SIGMA C	MEGA				
+1. 0	16.4					
+0.8	16.4					
+0.0	16.3					
+0.4	15.9					
+1.2	15+1					
+U+U =0-2	14+1 120					
-0.4	13.0					
-0.6	10-5					
-0.8	9.6					
-1.0	9.1					

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STGMA INELASTIC CONTINUOUS NEUTRONS LI 6 5.74 MEV LABORATORY SYSTEM LAB ANGLE BIAS SIGMA BELCW S.O. 30 DEG 0.5MEV 4.0 2.0 39 DEG 0.6MEV 6.4 3.2 47 DEG 0.4MEV 3.5 1.7 55 DEG 0.4MEV 3.0 1.5 72.5DEG 0.4MEV 3.0 1.5 90 DEG 0.4MEV 3.2 1.6 110 DEG 0.4MEV 3.2 1.6 5 O STANDARD DEVIATIONS ARE ABSO LAB ANGLE BIAS SIGMA BELCW S.D. SIGMA ABOVE S.D. SUM S.O. 68.7 6.9 72.7 7.2 5.1 50.8 57.2 6.0 59.2 6.0 62.7 6.2 0∎0 4∎8 48.1 51.1 5.0 4.0 43.0 40.0 4.3 31.8 35.0 3.2 3.6 23.5 2.4 26.5 2.8 17.7 1.8 20.9 2.4 S. D. STANDARC DEVIATIONS ARE ABSOLUTE RELATIVE ERRORS ARE ABCUT 0.5 OF THESE INTEGRATED CROSS SECTION 485 PLUS OR MINUS 48 MILLIBARNS VISUAL FIT LIG CONTINUUM 5.74 MEV ALL CONTINUOUS NEUTRONS COS THETA LAB SIGMA TEETA LAB 78.0 +1.0 +0.9 71.0 +0.8 65.0 +0.7 60.0 +0.6 55.0 +0.5 50.C +0.4 46.C +0.3 42.7 +0.2 40.0 +0.1 37.5 +0.0 35.0 -0.1 32.7 -0.2 30.5 -0.3 28.5 -0.4 26.4 -0.5 24.5 -0.6 22.6 -0.7 21.0 -0.8 19.0 -0.9

17.3

16.0

-1.0

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LI 6 1	30 EEG 5.	74 MEV	116	39 CEG 5.	74 MEV
E AVG	UN/EE AVG	S.D. AVG	E AVG	DN/CE AVG	S.D. AVG
0.3949	-200.9000	7.2771	0.3969	-0.2864	7.0448
0.4990	12.6492	3.5056	0.4990	11.7443	3.3815
0.6004	26.8275	3.3007	0.6004	25.4363	3.0563
0.7017	22.0596	2.8178	0.7017	25.7335	2.6595
0.8038	24.9562	2.5543	0.8038	25.4496	2.4098
0.9025	28.0087	2.4405	0.9025	21.8608	2.2649
1 10048	25.8602	2.2385	1.0048	23.2851	2.1111
1 2114	20.2011	2.2530	1.1068	25.4365	2.1397
1 3153	20.4193	2.0984	1.2114	20.2412	1.9296
1-4156	25-0623	2.0100	· 1•3155	21.9402	201411
1.5179	26-0273	2.0836	1 5170	21.9010	1 9813
1.6209	26.9578	2.0420	1 6209	10-1914	1-8462
1.7227	24.3297	2.0990	1-7227	20-9520	2.0207
1.8217	24.9865	2.0908	1-8217	21.4904	1.9579
1.9294	26.8394	1.9994	1.9294	17.5853	1.7808
2.0315	22.3458	2.1430	2.0315	13.8638	1,9148
2.1257	22.2044	1.9752	2.1257	17.9494	1.7690
2.2267	4ز84.19	1.8669	2.2267	15.9102	1.6861
2.3351	? 6 •7879	1.7880	2.3351	13.3648	1.6114
2.431-	19.4190	2.0375	2.4313	11.6280	. 9271
2.5341	19.4021	1.6772	2.5341	15.4031	1.5450
2.64.50	14.0043	1.9856	2.6430	15.9584	1.8686
2 - (3 - 2 -		1.9242	2.7355	16.5627	1.8631
20257	10.4910		2.8330	24.1269	1.8182
3.0441	24.0020	1 9477	2.9337	33.1407	2 0010
3,1587	54-0570	2-1061	3.1507	40 • . 7 1 0 0 50 2 2 0 1	2.0010
3.2487	69-0215	7,1345	2 2487	57.4934	2.501B
3.=430	64.2123	2-1813	3-3430	36-9661	1.7763
3.47:0	8.9097	1.8307	3.4750	17.2220	1.445-
3.5790	16.3233	2.1266	3.5790	11.1902	1.8624
3.6511	11.1967	1.9513	3.6511	8.5399	1.7006
3.7436	17.6371	1.4196	3.7636	10.3322	1.2335
3.8809	17.2760	2.0261	3.8809	13.1507	1.8159
3.9623	18.3400	2.0864	3.9623	15.2432	1.8275
4.0897	26.1212	1.5809	4.0897	19.8024	1.3259
4.2226	26.5176	2.2807	4.2226	23.6810	1.9988
4.3151	-4.7489	2.3794	4.3151	26.0617	2.0858
4.4107		2.4/52	4.4107	50-4175	2.12:9
4.5093	43+1000 54 (1638	2.8186	4.5095	04+40ZL 40 1574	202149
4.7175	60-5175	3-0150	4 •0 ± 10 4 - 7 1 7%	42+1370 50-0294	2.5911
4 8256	72.9538	3.2321	4-8266	57.1100	2.8524
4.9398	100.2206	2.5781	4.9398	94.9827	2.2475
5.0570	139.3655	4.0279	5.0570	156.7055	2.7703
5.1784	226.5619	4.9179	5.1784	209.4847	4.0761
5.3042	387.3607	6.208C	5.3042	380.1773	5.5042
5.4347	601.6172	7.4746	5-4347	396.1493	5.6458
5.5701	611.6811	7.6803	5.5701	253.6562	∍.98 2∃
5.7106	384.3442	6.5661	5.7106	96•8809	3.8957
5.8564	123.8265	4.4768	5.8564	9.3659	2.6173
6.0079	12.2255	2.3461	6.0079	-2.0134	1.5059
0.1654	-1.2938	1.0290	6.1654	0.5599	0.8265
6.3292	U. 1284	0.6578	6 • 3 2 9 2	0.4764	0.6730
6-4745	U-4CUD 	0.5403	6.4995	-0.8152	C. 5 2 6 7
6.8614	-0-2488	0-4694	0+0/07 <u>6</u> _8414	0.3400	0.56-7
7.0540	0.4015	0_4541		-0-0012	0_4835
7.2547	0.0793	0.4720	7.2547	0.0263	0.5452
7.4641	-0.1307	0.4711	7.4641	-0-8253	C.5051
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LI 6 4	47 CEG 5.	74 MEV	LI 6	55 CEG 5.	74 MEV
EAVG	ON/CE AVG	S.D. AVG	E AVG	ON/CE AVG	S.D. AVG
0.3969	23.2838	3.9517	0.3969	17.3853	5.7444
0.4990	28.9347	3.1794	0.4990	20.6008	3.0420
0.6004	51.0682	2.8467	0.6004	27.5124	2.6953
0.7017	29.3605	2.3060	0.7017	24.6291	Z.2149
0.8038	29.6218	2.1034	0.8038	25.1563	2.0509
0.9025	23.6843	2.0216	0.9025	23.3160	1.9264
1.0048	25.2979	1.8705	1.0048	22.5078	1.8083
1.1068	25.0806	1.8961	1.1068	25.4422	1.8537
1.2114	24.2300	1.7431	1.2114	27.2671	1.6562
1.3153	22.4013	1.8181	1.3153	24.9469	1.7835
1.4156	23.4109	1.7108	1.4156	23.6357	1.6099
1.5179	25.0467	1.7929	1.5179	24.0808	1.(103
1.6209	23.9165	1./15/	1.6209	21.0000	1.01/2
1.7277	24.8146	1.8161	1.6227	23.4019	1.5044
1.8217	20.3787		1.0204	21.4020	1 4051
1.4244	10.0290	1.3000	1.74	17 / 900	1 4 7 9 0
2.0317	11.0029	1.4500	2 • (/ 31 / 2	17.5199	1 5047
2 • 1 2 7 1	15.9300	1 6 2 9 4		12 2451	1 2027
2 2 2 2 0 1	17 2021	1 4447	2 2 2 2 5 1	12 • 2 0 3 1	1 3604
2 0 2 2 2 2 2 2	16 0936	1 9015	2.000	14 4 277	1 6079
2 6 3 4 3 1 3	17 9257	1 4 8 6 3	2 5341	19 0403	1 4453
2 6630	17 4510	1 7486	2-6430	25.7120	1 7946
2.7355	24-4596	1 7661	2.0470	37.9252	1-9081
2-8330	36-6597	1.8608	2-8330	50-1-43	2.0362
2.9357	48-5487	1-9633	2-9357	52-8061	1.9579
3-0441	59-8724	2-0374	3-0441	33-7318	1.5927
3,1587	47.2777	1.7878	3,1587	11-5507	1.2519
3.2487	24.7338	2.0504	3,2487	5.7259	1.6236
3.7430	12,9003	1.2966	3.3430	5,1214	1.1251
3.4750	10.5953	1.1443	3.4750	6.3024	1.0311
3.5790	9.1452	1.5839	3.5790	4.6904	1.3495
3.6511	4.4953	1.4369	3.6511	5.8560	1.2131
3.7630	10.5946	1.0654	3.7636	9.3553	0.9555
3.8809	11.0353	1.5012	3.8809	8.5450	1.3705
3.9623	13.0772	1.5581	3.9623	10.7323	628 د 1
4.0897	16.2465	1.1311	4.0897	16.7675	1.0502
4.2220	17.7790	1.6644	4.2220	15.4595	1.5449
4.3151	21.0660	1.7126	4.3151	16.9514	1.6463
4.4107	26.0665	1.8742	4.4107	22.4428	1.7013
4.5095	30.5178	1.9983	4 • 5 0 9 5	30.3827	1.9114
4.6115	41.4460	2.0943	4.6116	41.5946	2.1050
4.7173	51.7374	2.3311	4.7173	66.0963	2.3737
4.8266	81.4768	2.6836	4.8266	104.4420	2.8723
4.9398	133.5351	3.2401	4.9398	149.2261	3.2730
5.0570	221.4545	3.9665	5.0570	172.2533	3.4265
5.1784	280.2684	4.4135	5.1784	143.3495	3.1949
5.3042	251.5801	4.2770	5.3042	71.1124	2.529
5.4347	145.4912	3.5983	5.4347	17.9218	2.0893
5.5/01	44.5667	2.9126	5.5/01	2.9242	1.9193
5./106	4.4/28	2.3348	5./106	-1.9072	1.5747
2.8254	1.0407	1.0493	2.0070	-1.5104	1.2056
6.0019	1.7421	0.4040		-0.4507	0.4022
6.2202	-0.5000	0.0000	0 • 1 0 0 4 4 3 3 0 3	140000-	0 4852
6.4005	-0.4903	0.4540	0.5272 6 /005	0.5071	0 4 5 6 4
6-4740	0.1020	0 4 26 1	6 4747 6 4740	-0 2017	0 4024
6.0414	0 6 8 7 0	0 4161	U+0707 6 0414	-0.5011	0.4033
7.0540	0.2250	0-4320	7 0540	0 4022	0.4012
7.2547	1,1035	0.3018	7 - 2547		0.4050
102271	101700	0.3710	7	-0.0700	0.3544
7.4041	-0.3965	U•4111	r • 4 0 4 1	0.0123	0.2200

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LT 6 7	2.5 DEG 5.	74 MEV	L1 6 9	0 CEG 5.	74 MEV
E AVG	QN/CE AVG	S.D. AVG	E A VG	DN/CE AVG	S•D• ∆VG
0.3969	17.8963	4.0174	0.3969	Z1.2074	3.7152
0.4990	27.6930	3.1424	0.4990	24.5040	2.9122
0.6004	27.6294	2.7092	0.6004	27.4245	2.6016
0.7017	23.2912	2.2420	0.7017	21.4336	2.1508
0.8038	20 • 4740	2.0313	0.8038	22.6412	1.9527
0.9025	25.6279	1.9308	0.9025	19.1111	1.8372
1.0048	23.7251	1.7569	1.0048	22.4080	1.6961
1.1068	22.1317	1.7365	1.1068	18.6494	1.6818
1.2114	22.8375	1.5917	1.2114	20.0351	1.4747
1.3153	22.0853	1.6988	1.3153	15.1521	1.4904
1.4156	18.9520	1.5257	1.4156	14.0522	1.3972
1.179	10.4755	1.5920	1.5179	12.7110	1.4653
1 7 2 2 7	10.4:02	1.4307	1.6209	12.2315	1.2215
1 8217	14 - 4071	1 4440	1.7227	10./258	1.3444
1 0200	14.5722	1 3663	1.8217	13.51051	1.0500
2 (1315	14 0 200	1 4169	1.9294	1307194	1.6047
2 1 2 5 7	11 7909	1 2930	2.0313	22.00111	1.4507
2 9 2 2 2 7	12 6414	1 3/43	2.1237	54.0070	1 7.01
2 2 2 2 6 1	21 7304	1 4090	2 • 2 2 2 5 1	44.2942	1 = 0 2 1
2 6 2 1 2	2101277	2 0077	2.5551	32+1323	1 5494
2 4313		1 7301	2 67/1	2 4444	1 0474
2.6430	48-4007	2 0571	2-6430	3 4 703	1 1 2 4 3
2.7355	27-9013	1.6399	2.7355	2-1226	1.0392
2.83=0	12-7539	1-3062	2-8330	0-8824	0-9731
2.93.57	3-3265	1.0886	2.9357	2-4154	0.9271
3.0441	4.1043	0.9834	3.0441	2.1157	0.9920
3,1587	1.0910	1,0122	3.1587	2.3495	0.9974
3.2497	4.4779	1.4526	3.2487	7.3595	1.4238
3.2430	2.6233	C.9989	3.3430	3.0244	0.9350
3.4750	3.2867	0.9172	3.4750	4.2318	0.8861
3.5790	3.4266	1.1967	3.5790	9.4517	1.3876
3.6511	3.1822	1.1928	3.6511	9.3187	1.4375
3.7636	5.5147	C.8309	3.7636	15.7545	1.1073
3.8809	6.9593	1.2751	3.8809	30.1672	1.7979
3.9623	7.6838	1.2179	3.9623	45.2894	2.1093
4.0897	10 . 9526	0.9699	4.0897	65.6622	1.6808
4.2226	16 .9600	1.5621	4.2226	59.1389	2.2941
4.3151	26.1026	1.7486	4.3151	37.3547	1.9324
4.4107	42.7063	2.0427	4.4107	15.5348	1.4372
4.5095	65.3506	2.3665	4.5095	5.9001	1.1436
4.6116	78.2997	2.5433	4.6116	3.2656	1.0497
4.7175	74.8055	2.4504	4.7173	1.2871	C.9173
4.8266	52.8595	2.1379	4.8266	0.4948	0.9688
4.9398	23.5248	1.5841	4.9398	1.9929	0.8910
5.0570	6.1958	1.1459	5.0570	-1.0060	0.9642
5.1/84	0.7172	1.21028	2.1/84	1.4283	1.0055
5 4347	-0 0422	1 2 1 3 4	5 4247	-2.0004	1.0444
5 8 701	-7 6111	1.2115	5-5701	-1 4203	1.0444
5 7100	-1-4073	0.9762	5-7106	-0-3670	0.6720
5.2544	-0-0016	0_7480	5_8564	0-4676	0-4810
6-0079	-0-0580	0-5941	6-0079	-0-4824	0_4705
6.1654	-0.7700	0.4726	6-1654	-0-1123	0_4121
6.3297	-0.7625	0.3996	6.3292	0_2291	0.3474
6.4995	-0-0719	0.4056	6.4995	0.5118	0-4225
6.6769	0.1532	0.4072	6.6769	-0.4751	0.3706
6.8616	-0.3759	0.3749	6.8616	-0.5888	0.3917
7.0540	-0.4505	0.3949	7.0540	0.1441	0.3855
7.2547	0.3529	0.4146	7.2547	-0.1933	C.3395
7-4641	-0-1018	G -4195	7.4641	-0.0655	C.3574
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LT 0 11	O DEG 5.	74 MEV		LI 6 13	4 CEG 5.	74 MEV
E AVG	DN/CE AVG	S.D. AVG	ł	E AVG	DN/CE AVG	S.D. AVG
0.3969	19.5368	2.8476	• •	0.3969	21.2569	3.5871
0.4990	23.8615	3.1858	•	0.4990	26.2234	2.9769
0.6004	21.3285	2.7427		0.6004	23.4147	2.5675
0.7017	15.6650	2.2453		0.7017	21.7946	2.1935
0.8038	20.9582	2.0988		0.8038	17.1447	1.9574
0.9025	19,9575	1.9469		0.9025	12.7491	1.7609
1.0048	16.0674	1.7146		1.0048	12.5714	1.5629
1.1063	15.4845	1.6625		1.1068	7.0072	1.5078
1.2114	14.7052	1.4607		1.2114	10.8385	1.3995
1.3153	10.6669	1.5132		1.3153	7.0094	1.4699
1.4156	9.9165	1.3513		1.4156	9.1134	1.3891
1.5179	9.9040	1.3680		1.5179	19.2530	1.5773
1.6209	11.4157	1.3576		1.6209	29.6234	1.6345
1.7227	15.5744	1.4267		1.7227	16.6161	1.5590
1.8217	29.3860	1.5980		1.8217	2.4217	1.3094
1.9294	36.2381	1.5837		1.9294	0.5016	1.2733
2.0315	.21.2545	1.5288		2.0315	3.8291	1.5524
2.1257	6.6265	1.2364		2.1257	2.9571	1.6806
2.267	3.5578	1.1702		2.2267	1.1537	1.9017
2.3351	1.6690	1.1711		2.3351	3.2069	1.6702
2.4313	0.8600	1.2792		2.4313	3.4252	1.7463
2.5341	3.6015	1.0940		2.5341	2.3047	1.1619
2.6430	3.9697	1.1846		2.6430	3.7849	1.2218
2.7355	5.0228	1.0909		2.7355	4.8683	1.1538
2.6330	5.2043	1.1479		2.8330	8.6670	1.1456
2.9357	5.3199	1.1815		2.9357	11.6332	1.2027
3.0441	4.0176	1.2789		3.0441	19.7624	1.3679
3.1587	5.3816	1.2377		3.1587	47.4267	1.7358
3.2407	5.4180	1.7180		3.2487	75.1362	2.8286
3.3430	13.4147	1.2578		3.3430	73.6884	1.9495
3.4750	29.0634	1.3999		3.4750	28.5588	1.2739
3.5790	50 .2901	2.3701		3.5790	5.0417	1.1740
3.6511	62.5270	2.4823		3.6511	2.8427	1.0532
3.7636	52.9664	1.7180		3.7636	1.3226	0.7166
3.8809	43.0690	2.0506		3.8809	1.2541	1.0636
3.9623	22.4188	1.5930		3.9623	0.1338	1.0329
4.0897	5.1001	0.8412		4.0897	-0.8869	0.7015
4.2226	2.6081	1.1010		4.2226	3.2206	1.1001
4.3151	0.6698	1.0640		4.3151	0.1355	1.0566
4.4107	1.9770	1.1198		4.4107	0.3238	0.9924
4.5095	0.3839	1.0208		4.5095	1.3370	0.9408
4.0116	2.8232	0.9971		4.6116	863ۥ0	0.9242
4.7173	-0.0642	0.9631		4.7173	-1.1621	0.9659
4.8266	-0.1265	0.9140		4.8266	0.7770	0.9136
4.9398	-0.0642	0.8999		4.9398	-1.2ž70	C.9528
5.0570	0.5701	0.8819		5.0570	-2.4419	1.0755
5.1784	-1.3305	1.0408		5.1784	-1.1415	1.1292
5.3042	0.0224	1.0453		5.3042	0.6688	0.9492
5.4347	0.8146	0.9410		5.4347	0.1036	0.8054
5.5701	-0.2664	0.8048		5.5701	-0.1724	U.6731
5.7106	-0.5916	0.6060		5.7106	-0.7440	0.5750
5.8564	-0.9231	0.5332		5.8564	-0.0297	0.4680
6.0079	-0.3939	0.4842		6.0079	0.1534	0.3970
6.1654	-0.1586	0.4496		6.1654	-0.5532	0.4238
6.3292	0.0158	0.4205		6.3292	-0.7650	0.3510
6.4995	-0.2087	0.4391		6 • 4995	-0.2549	0.3758
6.6769	0.1549	0.4821		6.6769	0.3743	0.3910
6.8616	0.2337	0.4205		6.8616	-0.0281	0.3814
7.0540	0.4810	0.3691		7.0540	0.1841	C.3605
7.2547	0.8459	0.3729	•	7.2547	-0.6900	0.3826
7.4641	-0.3143	0.3504		7.4641	0.05 6 0	0.3702

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LITHIUM 7 ELA	STIC SCATTERI	NG 5.74 MEV L	OS ALAMOS 1967	
LI7 ELASTIC	CROSS SECTION	S INCLUDE 0.47	78 MEV STATE	
ALL CROSS SEC	TIONS IN MIL	LIBARNS PER STE	RADIAN OR MI	LLIBARNS TOTAL
VISUAL FIT CEN	TER OF MASS	SYSTEM		
COSIN	E DMEGA	SIGMA OMEGA		
+1.	0	667.0		
+0.	9	479.0		
+0.	8	345.0		
+0.	7	250.0		
+0.	ć	181.0		
+0.	5	130.0		
+0.	4	95.0		
+0.	3	71.0		
+0.	2	64.0		
+0.	1 ·	65.8		
+0.	0	68.8		
-0.	1	72.9		
-0.	2	77.9	•	
-0.	3	82.2		
-0.	4	85.0		
-0.	5	85.0		
-0.	6	81.7		
-0.	7	77.0		
-0.	8	71.0		
-0	• 9	64.9		
-1.	0	58.3		
ELASTIC SCAT	TERING DATA	CENTER OF MASS	LI 7 5•74	MEV
CUS OMEGA	SIGMA DMEGA	STANDARC (DEVIATIONS	
C • M•	C • M •	RELATIVE	ABSOLUTE	
+0.828	379.0	13.0	19.0	
+0.717	266.0	9.1	13.0	
+0.601	182.0	8.3	. 11.0	
+0.473	121.0	5.5	7.3	
+0.167	64.0	3.6	4.5	
-0.144	75.1	4.2	5+3	
-0.400	85.3	4.8	6.0	
-0. 100 INTECDATED	13.1 ELASTIC COOSS	4•2		71
INTEGRATEU	ELASIIC CRUSS	SECTION 1/00	PLUS OK MINUS	AT MILLIBARNS
LITHIUM 7 INE	LASTIC SCATTE	RING TO 4.63 M	EV LEVEL LOS A	LAMCS 67 5.74MEV
COS OMEGA	SIGMA CMEGA	STANDARC	DEVIATIONS	
С. М.	C • M •	RELATIVE	ABSOLUTE	
+0.707	11.3	1.7	1.7	
+0.530	11.9	1.8	1.8	
+0.355	10.7	1.5	1.6	
+0.173	8.7	1.3	1.3	
-0.209			:	
INTEGRATED	CROSS SECTION	(IF SHAPE IS	SIMILAR TO LI	6)

IS 114 PLUS CR MINUS 17 MILLIBARNS

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SIGMA IN	ELASTIC	CONTINUOUS	NEUTRON	S L17	5.74MEV		
LABURAT	JRY SYSTEM	1					
LAB ANGL	E BIAS	SIGMA BELO	• S•D•	SIGMA A80)VE S.O.	SUM	S.O.
30 DEG	0.5MEV	8.5	4.3	38.2	6.6	47.6	7.9
39 DEG	0.5MEV	10.6	5.3	27.7	5.6	38.3	7 .7
47 DEG	0•4MEV	3.3	1.7	26.8	5.0	30.1	5.3
55 DEG	0.4 MEV	6.0	3.0	28.3	4.4	34.3	5.3
72.50EG	0.7MEV	6.0	3.0	12.3	1.2	18.3	3.2
90 DEG	0.6MEV	3.8	1.9	9.6	1.0	13.4	2.1
110 DEG	0.6MEV	2.5	1.3	7.4	0.7	9.9	1.5
134 DEG	0.6MEV	1.5	1.8	2.5	0.3	4.0	1.9
S. D. ST	ANDARC DE	VIATIONS AF	RE A8SOL	UTE	• • • •		
RELATIV	E ERRCRS	ARE ABOUT (.5 NF T	HESE			
INTEGRA	TED CROS	S SECTION	224 P		NUS 34	MTLL TRAF	INS ARS.
VÍSUAL F		NTINUUM 5.	74 MEV			NELTRONS	
COS THEI		SIGNA THEI			11110003	NECTION.	,
+1-0		510%A 11C	LAD				
+0 0		71.0					
+0.9		, 40 E					
+0.0		40.00					
+0.7		30.7					
+0.6		30 • 7					
+0.5		26.2					
+0.4		22.8					
+0.3		19.8					
+0.2		17.5					
+0.1		15.5					
+0.0		13.8					
-0.1		12.2					
-0.2		10.7					
-0.3		9.3					
-0.4		8.0					
-0.5		6.7					
-0.6		5.5					
-0.7		4.4					
-0.8		3.3					
-0.9		2.2					
-1.0		1.1					

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LI 7 🤉	U CEG 5.	74 MEV		LT 7 3	9 CEG 5.	74 MEV
E AVG	DN/CE AVG	S.D. AVG	· · · · · · · · · · · · · · · · · · ·	E AVG	ON/CE AVG	S.D. AVG
0.3969	-9.5463	7.6242		0.3969	-19.9901	6.4543
0.4990	42.5285	3.5009		0.4990	53.3037	3.4054
0.6004	95.5343	3.6147		0.6004	99.6267	3.4084
0.7017	99.0539	3.2178		0.7017	85.0753	2.9383
0.8038	78.4479	2.8518		0.8038	47.3436	2.4402
0.9025	38.2086	2.3962		0.9025	22.4889	2.1125
1.0048	21.3567	2.0706		1.0048	15.3566	1.8898
1.1068	24.4124	2.0910		1.1068	17.4169	1.9116
1+2114	12.8305	1.8762		1.2114	12.9449	1.7214
1.0170	18.2077	1.9809		1.3153	14.3523	1.8212
	20+7497	1.0702		1+4150	16.0269	1.6640
1 + 209	17.0302	1.80712		1.6200	14.1804	1. (599
1 7227	15 2677	1 9701		1 7227	11.0370	
1.8217	12-9244	1-8330	I	1-8217	11 0449	1 7041
1.9294	12,1003	1.7173		1.9294	11.1000	1 5 9 2 7
2-0315	11.2782	1-8756		2.0315	7.5087	1 6950
2.1257	11.3566	1.7180		2.1257	11-4540	1.5800
2.2267	7.5733	1.5962		2.2267	8-0801	1.4603
2.3351	8.3509	1.5177		2.3351	7.7679	1,3947
2.4313	8.5381	1.7382		2.4313	5.7227	1.6970
2 5 34	9.7220	1.4571		2.5341	6.0723	1.3151
2.6430	4.3855	1.7182		2.6430	5-3410	1.5779
2.7355	8.9869	1.6710		2.7355	4.0942	1.5439
2.8330	9.0118	1.6101		2.8330	7.3807	1.4381
2.9357	8.7865	1.5193		2.9357	6.5697	1.3508
3.0441	9.6352	1.4228		3.0441	6.4072	1.3025
3.1587	9.6092	1.3972		3.1587	7.2859	1.2595
3.2487	10.8972	1.9217		3.2487	8.9217	1.7975
3.3430	11.0504	1.4127		3.3430	9.5732	1.2858
3.4750	12.7723	1.3904		3.4750	12.6348	1.2900
3.5790	14.2488	1.9712		3.5790	9.5762	1.7113
3.6511	16.8576	1.9636		3.6511	14.8843	1.7432
3.7636	17.0367	1.3377		3.7636	11.2191	1.1726
3.8809	18.7915	1.9499		3.8809	18.7279	1.8251
3.9623	21.5234	2.0356		3.9623	20.2025	1.8236
4.0897	27.7277	1.5207		4.0897	25.4127	1.3299
4.2226	£6.5492	2.3198		4.2226	32.9545	2.0517
4.5151	40.7957	2.5520		4.3151	30.2402	2.1428
4.4107	44 • 1 U 5 U	2.5154		4.4107	41.2389	2.1838
4 • 50 75	50.4019	2.0002		4.5095	51.9255	2.3010
4.7175	73-0433	3-0005		4.7173	78 9005	2.4003
4-8266	96-9117	3,3040		4-8266	105-0223	2 1024
4.9398	136-6291	3,7141		4.9398	123.0944	3 3401
5.0570	155-1244	4.1861		5-0570	172.4743	3.7345
5.1794	239.9166	4.7794		5.1784	251.7921	4.4000
5.3042	397.5619	5,9852		5.3042	374-8718	5.2600
5.4347	649.3107	7.3345		5.4347	464.0567	5.7407
5.5701	751.0245	7.8296		5.5701	368.9050	5.3027
5.7106	534.4164	6.8549		5.7106	186.5026	4.2654
5.8564	224.9333	4.8037		5.8564	46.3797	2.7993
6.0079	36.4992	2.4476		6.0079	2.2721	1.5243
6.1654	1.5801	1.0258		6.1654	0.9175	0.7767
6.3292	1.5036	0.6446		6.3292	0.1323	0.6094
6.4995	0.2293	0.5444		6.4995	-0.2148	0.5439
6.6769	-0.8080	0.5092		6.6769	-0.1837	0.5159
6.8616	0.4873	0.4741		6.8616	0.7230	0.5343
7.0540	0.3216	0.4130		740540	0.7662	0.4745
1+2547	-0.3710	0.4202		1+2,547	U•5344	0.5197
7.4641	-0.2285	0.4360		7.4641	0.0839	0.4970

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LI 7	47 CEG 5.	74 MEV		LI 7	55 CEG 5.	74 MEV
EAVG	ON/CE AVG	S.D. AVG	• •	EAVG	DN/CE AVG	S.D. AVG
0.3969	22.2893	3.6893		0.3969	38.2191	5.4614
0.4990	76.6115	3.3460		0.4990	80.5959	3.3218
0.6004	91.6256	3.1768		0.6004	75.6858	2•9637
0.7017	59.0944	2.4510		0 <u>.</u> 7017	33.9934	2.1793
0.8038	27•4434	1.9652		0.8038	21.8038	1.8998
0.9025	17.7692	1.8452		0.9025	16.3640	1.7398
1.0048	15.5615	1.6604		1.0048	11.8736	1.5860
1.1068	16.5768	1.6905		1.1068	15.8032	1.6369
1.2114	14.0938	1.5304		1.2114	16.3358	1.4364
1.3153	13.1661	1.5955		1.3153	14.0554	1.5418
1.4156	13.7537	1.4941		1.4156	13.2159	1.3838
1.5179	12.6027	1.5279		1.5179	13.2822	1.4657
1.6209	10.9255	1.4529		1.6209	9.2018	1.3555
1.7227	11.0125	1.5191		1.7227	9.1768	1.3861
1.8217	8.5143	1.4486		1.8217	11.0203	1.3511
1.9294	7.1014	1.3589		1.9294	9.5034	1.2980
2.0315	7.1530	1.4406		2.0315	8.8104	1.3918
2.1257	6.6371	1.4070		2.1257	4.4108	1.2758
2.2267	6.2352	1.2673		2.2267	5.4522	1.1926
2.3351	4.5111	1.1738		2.3351	5.6309	1.1188
2.4313	4.3525	1.5138		2.4313	4.0001	1.3848
2.5341	5.1201	1.2163		2.5341	866 8 8 68	1.1562
2.6430	5.1452	1.4278		2.6430	4.1326	1.3099
2.7355	5.7104	1.3446		2.7355	5.9574	1.2723
2.8330	4.1096	1.2157		2.8330	2.6130	1.1715
2.9357	5.7242	1.1870		2.9357	3.5518	1.0532
3.0441	4.5550	1.0920		3.0441	6.1496	1.0114
3.1587	7.6424	1.0633		3.1587	5.0012	1.0518
3.2487	8.9718	1.5586		3.2487	3.5237	1.4640
3.3430	6.0837	1.1016		3.3430	5.2425	1.0604
3.4750	10.4558	1.0795		3.4750	8.5243	1.0175
3.5790	7.6809	1.4570		3.5790	8.6608	1.3873
3.6511	. 9.0393	1.4747		3.6511	8.4396	1.3158
3.7636	12.8865	1.0495		3.7636	11.5824	0.9507
3.8809	11.8938	1.4428		3.8809	12.1144	1.3908
3.9623	13.2760	1.4813		3.9623	15.1853	1.4075
4.0897	19.6011	1.1263		4.0897	20•5482	1.0618
4.2226	22.6276	1.6783		4.2226	24.0686	1.6475
4.3151	30.0940	1.7984		4.3151	32.5542	1.8540
4.4107	32.9503	1.9001		4.4107	39.9323	1.9272
4.5095	48.5965	2.1743		4.5095	52.9932	2.1671
4.6116	63.8078	2.3120		4.6116	73.2274	2.4344
4.7173	78.6141	2.5563		4.7173	85.4241	2.5111
4.8266	100.8612	2.7785		4.8266	95.5964	2.6627
4.9398	124.3953	3.0242		4.9398	123.6923	2.9106
5.0570	180.7090	3.5251		5.0570	168.0503	3.2622
5.1784	271.7117	4.1883		5.1784	180.6511	3.3790
5.3042	316.1207	4.5004		5.3042	136.5575	3.0592
5.4347	233.6005	4.0430		5.4347	57.0297	2.4231
5.5701	100.0542	3.2178		5.5701	13.6743	1.9401
5.7106	16.8993	2.3222		5.7106	0.4812	1.6003
5.8564	1.2850	1.5391		5.8564	-0.4712	1.1425
6.0079	1.9040	0.8672		6.0079	0.8195	0.7343
6.1654	-1.1122	0.5427		6.1654	0.1403	0.4855
6.3292	-0.0033	U.4764		6.3292	-0.4575	0.3702
6.4995	0.6325	0.4789	-	6.4995	0.0403	0.4125
6.6769	0.5274	0.4166		6.6769	0.5512	0.4207
6.8616	0.6745	0.3956		6.8616	-0.1738	0.3609
7.0540	0.0966	0.3982		7.0540	0.3200	0.3923
. 7.2547	0.8748	0.3527		7.2547	-0 .35 35	0.3928
7.4641	-0 .0567	0.3999		7.4641	0.5727	0.3615

LI 7 7	72.5 CEG 5.	74 MEV	- ىز	LT 7	90 CEG 5.	74 MEV
E AVG	ON/CE AVG	S.D. AVG		EAVG	DN/CE AVG	S-D- AVG
0.3969	45.9276	3.8677	· · I	0.3969	25.7469	3,5871
0.4990	47.1434	3.0487		0.4990	17.9202	2.7239
0.6004	18.2238	2.4051	•	0.6004	15.9589	2.3770
0.7017	13.4808	1.9714		0.7017	13-5469	1,9709
0.8038	8.8129	1.7475		0.8038	11-6201	1.7429
0.9025	10.9442	1.6301		0.9025	10.6056	1 6517
1.0048	14-4748	1.5296		1.0048	10 5 8 9 1	1 4911
1.1068	12-9426	1.5006		1.1068	4 0419	1 4307
1-2114	11,9000	1.3478		1.2114	7 9409	1 2471
1.3153	6-4108	1,3581		1 2162	4 6 3 1 9	1 2 2 7 7 1
1-4156	9-4075	1.2862		1 4164	6 6 2 2 1 0	1.2001
1-5179	6.9088	1.3390		1 6170	3 1054	1 2440
1.6209	6.0127	1.1857		1 6200	201724	1.1007
1.7227	4 1 284	1 2121		1 7 2 2 7	2.4019	1.1/25
1 9217	2 4424	1 1 9 0 5		1.0217	0.0471	1.1455
1 0 2 0 4	J • 7 7 J 7 6 6013	1 0030		1.0207	0.8324	1.0827
2 0215	4.5915	1.070		1.9294	2.5262	0.9995
2.0515	2.7455	1.1122		2.0315	3.8442	1.0576
2+1257	2.1000	1.1125		2.1257	2.6593	1.0286
2.7201	5.4/58	1.0606		2.2267	4.9514	1.0401
2.3371	6.1152	1.0500		2.3351	2.8171	1.0323
2.4413	5.0737	1.3491		2.4313	5.7705	1.2942
2.5341	3.6447	1.0457		2.5341	4.0087	0.9993
2.6430	3.6454	1.1834		2.6430	4.5199	1.0943
2.7355	3.3020	1.0617		2.7355	5.3538	1.0514
2.8330	5.4902	1.0655		2.8330	5.1617	1.0320
2.9357	2.4506	0.9872		2.9357	4.6970	0.9419
5.0441	4.7319	0.9272		3.0441	4.1652	0.9898
3.1587	4.3381	1.0084		3.1587	6.1804	1.0264
3.2427	5.9126	1.3948		3.2487	9•3676	1.4199
3.3430	5.3291	0.9847		3.3430	9.9428	1.0358
3.4750	6.6940	0.9268		3.4750	13.3539	1.0354
3.5790	9.1977	1.2939		3.5790	16.8238	1.5235
3.6511	7.4014	1.1830		3.6511	23.0202	1.7034
3.7636	11.1478	0.8959		3.7636	36.6473	1.3695
3.8809	15.9715	1.4328		3.8809	56.9294	2.2053
3.9623	22.4790	1.5215		3.9623	62+0358	2.2947
4.0897	37.8541	1.3132		4.0897	70.6006	1.6711
4.2226	57.7814	2.1921		4.2226	85.3817	2.5629
4.3151	59.6844	2.2066		4.3151	94.5542	2.6539
4.4107	62.8831	2.2438		4.4107	94.3489	2.5950
4.5095	62.2868	2.2230		4.5095	68.3261	2.2219
4.6116	7 3 ∎8904	2.3811		4.6116	33.2394	1.6594
4.7173	85.3568	2.4725		4.7173	13.9170	1.2168
4.8266	68.0834	2.2419		4.8266	3.5048	1.0024
4.9398	41.8077	1.8074		4.9398	2.8523	0.8634
5.0570	17.3481	1.3486		5.0570	-0.1871	0.9300
5.1784	5.6899	1.1977		5.1784	1.6070	0.9537
5.3042	5.0480	1.2108		5.3042	-1.8692	1.0480
5.4347	-0.8219	1.2188		5.4347	-0.8399	0.9873
5.5701	-2.0378	1.1343		5.5701	0.9591	0.8793
5.7106	-1.6103	0.8862	· · ·	5.7106	0.3207	0.5603
5.8564	-1.3932	0.6404		5.8564	1.0234	0.4885
6.0079	-0.6932	0.5188		6.0079	-0.2994	0.4190
6.1654	-1.4152	0.3946		6.1654	-0.3723	0.3803
6.3292	-0.0134	C.3971		6.3292	0.1529	0.3306
6.4995	. 0.5747	0.3997		6.4995	0.0799	0.3822
6.6769	0.6148	0.3920		6.6769	-0.0040	0.3812
6.8616	0.4332	0.3801		6.8616	-0.2851	0.3889
7.0540	-0.2538	0.3647		7.0540	-0.3631	0.3407
7.2547	-0.1319	0.3502		7.2547	0.1502	0.3447
7.4641	-0.4704	0.3610		7.4641	-0.0036	0.3455

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LT 7 1	10 CEG 5.	74 MEV	L 1 , 7	134 CEG 5.	74 MEV
E AVG	ON/CE AVG	S.D. AVG	É AVG	ON/CE AVG	S.D. AVG
0.3969	20.0254	3.5607	0.396	9 4.0464	3.1848
0.4990	18.9731	2.9115	0.499	0 6.2912	2.5973
0.6004	10.3808	2.4418	0.600	4 8.0034	2.2386
0.7017	10.2027	2.0304	0.701	7 2.6488	1.8508
0.8038	11.6835	1.8601	0.803	8 4.8188	1.6917
0.9025	9.4518	1.7038	0.902	5 4.2715	1.5408
1.0048	6.5542-	1.4903	1.004	8 4.0061	1.3518
1.1068	6.3971	1.4325	1.106	8 0.9182	1.3179
1.2114	5.6861	1.2414	1.211	4 0.2866	1.1572
1.3155	2.3318	1.2792	1.315	3 0.0637	1.2593
1.4156	3.0739	1.1506	1.415	6 1.2602	1.1775
1.6200	3.9638	1.1/3/	1.517	9 -0.7555	1.1654
1 7227	0.4920	1.0871	1.620	9 -0.3847	1.1008
1 9217	4.0002	1.0472	1.722	-0.0806	1.1782
1 0204	2.1713	1.0052	1.821	7 -0.0402	1.1/4/
2 0315	2 9451	1 0804	1.929	4 0.6838	1.1868
2 1 2 5 7	2.0001	1.0702	2.031	5 1.1255	1.4020
2.2267	2.0702	1 0720	2.123	7 2 2 2 (0)	1.7070
2-3351	2 9 5 1 2	1 1110	2.220		1.6/8/8
2.4313	5-0881	1 2 2 0 1	2.333	T 1.9095	1.60419
2-5341	3.5465	1.0187	2.6431	J 4.1001	1 1204
2-6430	7-0106	1 1773	2.000	0 4 5 1 0 2	1 2044
2.7355	8-2578	1.0985	2.043	5 7 3 4 1 8	1 1 200
2.8330	7.3344	1,1214	2.833		1.1252
2.9357	10-3008	1,2086	2.035	7 16.2294	1.2283
3.0441	10.5102	1.3137	3-044	1 26.3980	1.4091
3.1587	14.2469	1.3162	3,158	43-0854	1.6053
3.2487	16.9016	1.8887	3.248	45-2228	2.1971
3.3430	27.5287	1.4108	3.343	0 55.9044	1.6626
3.4750	48.6230	1.5979	3.475	0 113.9084	2.1986
3.5790	56.5281	2.3701	3.579	0 128.8723	3.2644
3.6511	65.1156	2.4214	3.651	1 91.8501	2.7556
3.7636	78.4817	1.8096	3.763	6 32.8569	1.2601
3.8809	114.2984	2.9736	3.880	4.0701	1.0857
3.9623	126.8733	3.0759	3.962	3 2.6224	1.0448
4.0897	85.4683	1.8167	4.089	7 0.6058	0.7410
4.2226	28.0198	1.6408	4.222	6 1.3131	0.9688
4.3151	10.0307	1.2523	4.315	1 -0.3384	C.9679
4.4107	1.4958	1.0301	4.410	1.0126	0.9460
4.5095	1.8208	0.9931	4.509	5 1.0458	0.8675
4.6116	1.8896	0.9016	4.611	.6 0.4400	0.8644
4.7173	0.2445	0.9037	4.717	3 -2.0248	0.8662
4.8266	0.1799	0.8579	4.826	6 1.2076	0.8652
4.9398	0.6180	0.8571	4.939	8 -0.3462	0.9109
5.0570	1.3576	0.8451	5.057	0 -0.8607	1.0390
5 3043	-0.0423	0.9798	5.178	4 -1.3614	1.0446
5 4347	-0 1207	0 9405	5.304	2 0.3428	0.8753
5 5701	-0 4 29 2	0.73/3	5.434	-1.2728	0.7016
5-7106	-0.0202	0.5786	5.570		0.5888
5-8564	-1.0827	0.4905	5.710		0.5258
6.0079	0-1617	0-4704		0 0 1 7 0 0	0 3400
6.1654	0_8150	0-4591		7 Uel/88	0 2000
6.3292	-0-1771	0-3757	4 330	-0 4340	0.2778
6.4995	-0-0562	0-4104		0.0014	0-3455
6.6769	-0-5180	0-4114	6 47	-0-0710 -0-1101	0-2220
6.8616	-0.2607	0.3596		6 0.2109	0-3651
7.0540	0.9404	0.3652	7_054	0 0-2100	0-3720
7.2547	0.4500	0.3211	7-254	7 -0.8452	0_3420
7.4641	0.4435	0.3614	7.464	-0.7528	0.2935

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LITHIUM & ELASTIC SCATTERI	ING 7.5 MEV LOS ALAMOS 1967
ALL CROSS SECTIONS IN MIL	LIBARNS PER STERADIAN OR MILLIBARNS TOTAL
VISUAL FIT CENTER CF MASS	SYSTEM
COSINE OMEGA	SIGMA OMEGA
+1.0	674.0
+0.9	440.0
+0.8	• 290.0
+0 • 7	191.0
+0.6	128.0
+0.5	87.5
+0.3	
+0.5	71.00
+0+2	26.0
+0-1	25-0
-0-1	24.9
-0-2	24-8
-0-3	24.7
-0.4	24.6
-0.5	24.9
-0.6	25.3
-0.7	26.0
-0.8	26.9
-0.9	27.6
-1.0	28.6
ELASTIC SCATTERING DATA	CENTER OF MASS LI 6 7.5 MEV
COS DMEGA SIGMA DMEGA	STANDARC DEVIATIONS
C • M • C • M •	RELATIVE ABSOLUTE
+0.706 196.0	6.9 9.8
+0.456 74.1	3.3 4.4
+0.144 27.4	1.5 1.9
-0.168 24.8	1.4 1.7
-0.486 24.7	1.4 1.7
-0.486 24.7 -0.786 26.4	1.4 1.7 1.4 1.8
-0.486 24.7 -0.786 26.4 INTEGRATED ELASTIC CROSS	1.4 1.7 1.4 1.8 S SECTION 1194 PLUS OR MINUS 48 MILLI8ARNS
-0.486 24.7 -0.786 26.4 INTEGRATED ELASTIC CROSS	1.4 1.7 1.4 1.8 S SECTION 1194 PLUS OR MINUS 48 MILLIBARNS
-0.486 24.7 -0.786 26.4 INTEGRATED ELASTIC CROSS LITHIUM 6 INELASTIC SCATTER	1.4 1.4 1.4 S SECTION 1194 PLUS OR MINUS 48 MILLIBARNS RING TO 2.18 MEV LEVEL LOS ALAMOS 67 7.5MEV STANDARD DEVIATIONS
-0.486 24.7 -0.786 26.4 INTEGRATED ELASTIC CROSS LITHIUM 6 INELASTIC SCATTER CUS DMEGA SIGMA DMEGA C.M. C.M.	1.4 1.4 1.4 S SECTION 1194 PLUS OR MINUS 48 MILLIBARNS RING TO 2.18 MEV LEVEL LOS ALAMOS 67 7.5MEV STANDARC DEVIATIONS RELATIVE ABSOLUTE
-0.486 24.7 -0.786 26.4 INTEGRATED ELASTIC CROSS LITHIUM 6 INELASTIC SCATTER CUS OMEGA SIGMA OMEGA C.M. C.M. +0.689 16.0	1.4 1.4 1.4 S SECTION 1194 PLUS OR MINUS 48 MILLIBARNS RING TO 2.18 MEV LEVEL LOS ALAMOS 67 7.5MEV STANDARC DEVIATIONS RELATIVE ABSOLUTE 1.5 1.6
-0.486 24.7 -0.786 26.4 INTEGRATED ELASTIC CROSS LITHIUM 6 INELASTIC SCATTER CUS OMEGA SIGMA OMEGA C.M. C.M. +0.689 16.0 +0.427 14.4	1.4 1.4 1.4 1.8 S SECTION 1194 PLUS OR MINUS 48 MILLIBARNS RING TO 2.18 MEV LEVEL LOS ALAMOS 67 7.5MEV STANDARC DEVIATIONS RELATIVE ABSOLUTE 1.5 1.6 1.3 1.4
-0.486 24.7 -0.786 26.4 INTEGRATED ELASTIC CROSS LITHIUM 6 INELASTIC SCATTER CUS OMEGA SIGMA OMEGA C.M. C.M. +0.669 16.0 +0.427 14.4 +0.107 13.2	1.4 1.4 1.4 1.8 S SECTION 1194 PLUS OR MINLS 48 MILLIBARNS RING TO 2.18 MEV LEVEL LOS ALAMOS 67 7.5MEV STANDARD DEVIATIONS RELATIVE ABSOLUTE 1.5 1.6 1.3 1.4 1.2 1.3
-0.486 24.7 -0.786 26.4 INTEGRATED ELASTIC CROSS LITHIUM 6 INELASTIC SCATTER CUS OMEGA SIGMA OMEGA C.M. C.M. +0.669 16.0 +0.427 14.4 +0.107 13.2 -0.206 11.4	1.4 1.7 1.4 1.8 S SECTION 1194 PLUS OR MINLS 48 MILLIBARNS RING TO 2.18 MEV LEVEL LOS ALAMOS 67 7.5MEV STANDARD DEVIATIONS RELATIVE ABSOLUTE 1.5 1.6 1.3 1.4 1.2 1.3 1.0 1.1
-0.486 24.7 -0.786 26.4 INTEGRATED ELASTIC CRDSS LITHIUM 6 INELASTIC SCATTER CUS DMEGA SIGMA DMEGA C.M. C.M. +0.689 16.0 +0.427 14.4 +0.107 13.2 -0.206 11.4 -0.518 7.8	1.4 1.4 1.4 1.8 S SECTION 1194 PLUS OR MINUS 48 MILLIBARNS RING TO 2.18 MEV LEVEL LOS ALAMCS 67 7.5MEV STANDARC CEVIATIONS RELATIVE ABSOLUTE 1.5 1.6 1.3 1.4 1.2 1.3 1.0 1.1 0.7 0.8
-0.486 24.7 -0.786 26.4 INTEGRATED ELASTIC CRDSS LITHIUM 6 INELASTIC SCATTER CUS DMEGA SIGMA DMEGA C.M. C.M. +0.689 16.0 +0.427 14.4 +0.107 13.2 -0.206 11.4 -0.518 7.8 -0.803 7.4	1.4 1.7 1.4 1.8 S SECTION 1194 PLUS OR MINUS 48 MILLIBARNS RING TO 2.18 MEV LEVEL LOS ALAMOS 67 7.5MEV STANDARC DEVIATIONS RELATIVE ABSOLUTE 1.5 1.6 1.3 1.4 1.2 1.3 1.0 1.1 0.7 0.8 0.6 0.7
-0.486 24.7 -0.786 26.4 INTEGRATED ELASTIC CRDSS LITHIUM 6 INELASTIC SCATTER CUS OMEGA SIGMA DMEGA C.M. C.M. +0.669 16.0 +0.427 14.4 +0.107 13.2 -0.206 11.4 -0.518 7.8 -0.803 7.4 INTEGRATED CRDSS SECTION	1.4 1.7 1.4 1.8 S SECTION 1194 PLUS OR MINUS 48 MILLIBARNS RING TO 2.18 MEV LEVEL LOS ALAMOS 67 7.5MEV STANDARC DEVIATIONS RELATIVE ABSOLUTE 1.5 1.6 1.3 1.4 1.2 1.3 1.0 1.1 0.7 0.8 0.6 0.7 149 PLUS OR MINUS 15 MILLIBARNS
-0.486 24.7 -0.786 26.4 INTEGRATED ELASTIC CRDSS LITHIUM 6 INELASTIC SCATTER CUS OMEGA SIGMA DMEGA C.M. C.M. +0.669 16.0 +0.427 14.4 +0.107 13.2 -0.206 11.4 -0.518 7.8 -0.803 7.4 INTEGRATED CRDSS SECTION VISUAL FIT CENTER OF MASS	1.4 1.7 1.4 1.8 S SECTION 1194 PLUS OR MINUS 48 MILLIBARNS RING TO 2.18 MEV LEVEL LOS ALAMOS 67 7.5MEV STANDARC CEVIATIONS RELATIVE ABSOLUTE 1.5 1.6 1.3 1.4 1.2 1.3 1.0 1.1 0.7 0.8 0.6 0.7 149 PLUS OR MINUS 15 MILLIBARNS S SYSTEM LI 6 7.5 2.18MEV LEVEL
-0.486 24.7 -0.786 26.4 INTEGRATED ELASTIC CROSS LITHIUM 6 INELASTIC SCATTER CUS OMEGA SIGMA DMEGA C.M. C.M. +0.669 16.0 +0.427 14.4 +0.107 13.2 -0.206 11.4 -0.518 7.8 -0.803 7.4 INTEGRATED CROSS SECTION VISUAL FIT CENTER OF MASS COS OMEGA SIGMA CMEGA	1.4 1.7 1.4 1.8 S SECTION 1194 PLUS OR MINUS 48 MILLIBARNS RING TO 2.18 MEV LEVEL LOS ALAMOS 67 7.5MEV STANDARC CEVIATIONS RELATIVE ABSOLUTE 1.5 1.6 1.3 1.4 1.2 1.3 1.0 1.1 0.7 0.8 0.6 0.7 149 PLUS UR MINUS 15 MILLIBARNS S SYSTEM LI 6 7.5 2.18MEV LEVEL
-0.486 24.7 -0.786 26.4 INTEGRATED ELASTIC CROSS LITHIUM 6 INELASTIC SCATTER CUS OMEGA SIGMA OMEGA C.M. C.M. +0.669 16.0 +0.427 14.4 +0.107 13.2 -0.206 11.4 -0.518 7.8 -0.803 7.4 INTEGRATED CROSS SECTION VISUAL FIT CENTER OF MASS COS OMEGA SIGMA CMEGA +1.0 17.3	1.4 1.7 1.4 1.8 S SECTION 1194 PLUS OR MINUS 48 MILLIBARNS RING TO 2.18 MEV LEVEL LOS ALAMOS 67 7.5MEV STANDARC CEVIATIONS RELATIVE ABSOLUTE 1.5 1.6 1.3 1.4 1.2 1.3 1.0 1.1 0.7 0.8 0.6 0.7 149 PLUS UR MINUS 15 MILLIBARNS S SYSTEM LI 6 7.5 2.18MEV LEVEL
-0.486 24.7 -0.786 26.4 INTEGRATED ELASTIC CROSS LITHIUM 6 INELASTIC SCATTER CUS OMEGA SIGMA OMEGA C.M. C.M. +0.669 16.0 +0.427 14.4 +0.107 13.2 -0.206 11.4 -0.518 7.8 -0.803 7.4 INTEGRATED CROSS SECTION VISUAL FIT CENTER OF MASS COS OMEGA SIGMA OMEGA +1.0 17.3 +0.9 17.1	1.4 1.7 1.4 1.8 S SECTION 1194 PLUS OR MINUS 48 MILLIBARNS RING TO 2.18 MEV LEVEL LOS ALAMCS 67 7.5MEV STANDARC CEVIATIONS RELATIVE ABSOLUTE 1.5 1.6 1.3 1.4 1.2 1.3 1.0 1.1 0.7 0.8 0.6 0.7 149 PLUS OR MINUS 15 MILLIBARNS S SYSTEM LI 6 7.5 2.18MEV LEVEL
-0.486 24.7 -0.786 26.4 INTEGRATED ELASTIC CROSS LITHIUM 6 INELASTIC SCATTER CUS OMEGA SIGMA OMEGA C.M. C.M. +0.689 16.0 +0.427 14.4 +0.107 13.2 -0.206 11.4 -0.518 7.8 -0.803 7.4 INTEGRATED CROSS SECTION VISUAL FIT CENTER OF MASS COS OMEGA SIGMA CMEGA +1.0 17.3 +0.9 17.1 +0.8 16.8	1.4 1.7 1.4 1.8 S SECTION 1194 PLUS OR MINUS 48 MILLIBARNS RING TO 2.18 MEV LEVEL LOS ALAMOS 67 7.5MEV STANDARC CEVIATIONS RELATIVE ABSOLUTE 1.5 1.6 1.3 1.4 1.2 1.3 1.0 1.1 0.7 0.8 0.6 0.7 149 PLUS OR MINUS 15 MILLIBARNS S SYSTEM LI 6 7.5 2.18MEV LEVEL
-0.486 24.7 -0.786 26.4 INTEGRATED ELASTIC CROSS LITHIUM 6 INELASTIC SCATTER CUS OMEGA SIGMA OMEGA C.M. C.M. +0.689 16.0 +0.427 14.4 +0.107 13.2 -0.206 11.4 -0.518 7.8 -0.803 7.4 INTEGRATED CROSS SECTION VISUAL FIT CENTER OF MASS COS OMEGA SIGMA CMEGA +1.0 17.3 +0.9 17.1 +0.8 16.8 +0.7 16.4	1.4 1.7 1.4 1.8 S SECTION 1194 PLUS OR MINUS 48 MILLIBARNS RING TO 2.18 MEV LEVEL LOS ALAMOS 67 7.5MEV STANDARD DEVIATIONS RELATIVE ABSOLUTE 1.5 1.6 1.3 1.4 1.2 1.3 1.0 1.1 0.7 0.8 0.6 0.7 149 PLUS OR MINUS 15 MILLIBARNS S SYSTEM LI 6 7.5 2.18MEV LEVEL
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SIGMA INELAS	STIC CONTINUOUS	NEUTRONS	LI 6	7.5MEV	•	
LABORATORY S	SYSTEM					
LAB ANGLE E	BIAS SIGMA BELCH	4 S.O. SIG	MA ABOVE	S.O.	SUM	S.O.
39 DEG 0.	.5MEV 4.8	2.4	57.4	6.3	62.2	6.7
55 DEG 0.	4MEV 5.5	2.8	62.0	6.8	67.5	7.4
72.50EG 0.	.5MEV 10.0	5.0	46.3	5.1	56.3	7.1
90 DEG 0.	.6MEV 8.8	4•4	31.3	3.4	40.1	5.6
110 DEG 0.	.5MEV 6.6	3.3	26.6	2.9	33.2	4.4
135 DEG 0.	4MEV 3.0	1.5	23.6	2.6	26.6	3.0
S.O. STANDA	ARC DEVIATIONS AF	RE ABSOLUTE	•			
RELATIVE EF	RORS ARE ABOUT (D.5 OF THES	E			
INTEGRATED	CROSS SECTION	569 PLUS OR	MINUS 5	7 MILLI	BARNS	
VISUAL FIT	LIG CONTINUUM 7	7.5 MEV ALL	. CONTINU	OUS NEU	TRONS	
COS THETA LA	48 SIGMA T⊢E1	TA LAB				
+1.0	69•4					
+0.9	69.0					
+0.8	68.0					
+0.7	66.2					
+0.6	64•C					
+0.5	61.0					
+0.4	57.9					
+0.3	54.0					
+0.2	50.C				•	
+0.1	46.4					
+0.0	43.0					
-0.1	39•7					
-0.2	36.6	•				
-0.3	33.9					
-0.4	31.3					
-0.5	29.3					
-0.6	27.9					
-0.7	27.0					
-0.8	26.5					
-0.9	26.0					
-1.0	26.0					

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LT 6	39 FFG 7.	5 MEV	• - 1 - 1 T − 6 - 5	5 DEG 7.	5 MEV
EAVG	DN/CE AVG		LI O J		
0.3961	149-1517	5-5646	0-3961	-2-9933	4-6870
0.4981	15-8366	2-0410	i 0-4981	26-8040	1.5648
0.5997	18.0420	1.5298	0.5997	23.5370	1.1654
0.7002	16-0689	1-3220	0.7002	23-0982	1.0164
0.8031	16.9865	1.1231	0.8031	21.4867	0.8559
0.9084	16.8942	1.0482	0,9084	19.6193	0.8104
1.0105	16.8432	1.0014	1.0105	19.4646	0.7848
1.1073	17.2125	1.0297	1.1073	17.8005	0.8171
1.2059	16.1853	0.9549	1.2059	20.1542	0.7580
1.3105	16.6273	0.9333	1.3105	18,1397	0.7546
1.4127	13.6792	0.9425	1.4127	16.8063	0.7563
1.5181	14.3466	0.8624	1.5181	18.4671	0.7065
1.6253	14.0348	0.8973	1.6253	17.3493	0.7351
1.7216	14.5801	0.9753	1.7216	17.3474	0.7990
1.8148	14.6171	0.9690	1.8148	15.7374	0.7642
1.9158	12.8163	0.920 7	1.9158	16.0066	0.7187
2.0254	11.8914	0.8644	2.0254	16.2417	0.6699
2.1290	13.1995	0.9607	2.1290	15.4052	0.7389
2.2245	11.5361	0.9223	2.2245	16.2085	0.7151
2.3265	12.2225	0.8930	2.3265	14.5693	0.6734
2.4357	10.5711	0.8489	2.4357	14.1412	0.6472
2.5325	12.5805	0.9815	2.5325	13.8418	0.7707
2.6356	11.3368	0.7536	2.6356	12.9633	0.5902
2.1441	11.9260	0.9027	2.7447	12.5702	0.7105
2.8371	10.6789	0.8663	2.8371	12.3946	0.6592
2.9342	12.5616	0.8140	2.9342	10.6862	0.6228
3.0365	12.5781	0.7503	3.0365	10.4396	C.5851
301441	12.4038	0.7037	3.1441	11.4420	0.5544
202210	13.3925	0.6836	3.2576	9.9606	0.5326
2.0714	12.0372	0.0027	3.3/14	10.5927	0.5205
3 5 4 7 1 4	12.0402	0.9213	3.4/14	9.4539	0.6975
3.6720	12 61062	0 8444	202040	9.0777	0.4746
3.7791	11.2377	0.5769	3.7701	10 4593	0-4738
3.8905	12-6536	0-8107	3-8905	11-4522	0.6877
3.9676	13.0738	0.8171	3-9676	14-6831	0.7115
4.0881	15.8592	0.5892	4-0881	20.8581	0.5617
4.2135	18.3607	0.8676	4.2135	31.3387	0.9057
4.3005	19.9741	0.8809	4.3005	36.5068	0.9540
4.3903	22.2707	0.9157	4.3903	42.1314	C.9644
4.4829	26.8193	0.9424	4.4829	35.8554	0.9004
4.5785	35.5364	0.9948	4.5785	22.9857	0.7479
4.6771	42.8392	1.0199	4.6771	11.4576	C.6408
4.7790	46.4026	1.0296	4.7790	7.5631	0.5620
4.8843	40.2455	0.9638	4.8843	5.7646	0.5280
4.9930	24.8389	0.8402	4.9930	5.3730	0.5343
5.1055	15.5754	0.7698	5.1055	5.1493	C•5145
5.2217	12.1623	0.7127	5.2217	4.9638	0.4898
5.3420	11.3089	0.6886	5.3420	7.0357	0.4836
5.4665	12.2936	0.6673	- 5.4665	7.9360	0.4970
5.5955	13.3515	0.6726	5.5955	9.6862	0.5132
5.7290	16.5028	0.7042	5.7290	12.8755	0.5647
5.8673	20.7361	0.7331	5.8673	17.8178	0.6137
6.0108	23.3921	0.7336	6.0108	31.8817	0.7206
0.1595	22+1217	0.7980	6.1595	59.9595	0.9077
0.5139	DU-6/30	0.9296	6.3139	103-2318	1.191
6 4141	100.1450	1 7447	6.4741	120.0039	1.0423
0 0 0 4 UD	250.7104	1.00/	6.6405	01.2221	1.0422
6-0021	22100174 286 6084	20202	0.8134	2100141	0 4169
7,1001	106 7405	2.0203	. 0.9931	2 0 170	0-20230
7.2744	12 47/4	1 1 2 2 0 2	1 • 1 8 U 1 7 • 3 7 4	_0 0221	2027 0 2027 0
7.5777	_3_0741	1.1220	7_6770	0.5732	0-3285
	24VITL	~ • • • • • • • • • • • • • • • • • • •	1.4.7.16	~~~~~	00-10/

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LI 6	72.5 CEG 7.	5 MEV _		0 CEG 7.	5 MEV
EAVG	ON/CE AVG	S.D. AVG	E AVG	ON/CE AVG	S.D. AVG
0.3961	35.2818	2.8782	0.3961	47.7740	2.7464
0.4981	29.7219	1.5240	0.4981	25.7869	1.4912
0.5997	26.4329	1.1352	0.5997	22.6915	1.1366
0.7002	23.1856	0.9923	0.7002	19.3513	0.9839
0.8031	21.3840	0.8154	0.8031	18.2530	0.8142
0.9084	19.4553	0.7628	0.9084	15.8466	0.7492
1.0105	19.5630	0.7433	1.0105	15.0336	0.7282
1.1073	19.1622	0.7707	1.1073	16.7313	0.7438
1.2059	17.4559	0.7124	1.2059	15.1718	0.6791
1.4107	16.05//	0.6922	1.3105	15.3988	0.6743
1 6101	16 6623	0.6983	1.4127	14.0842	0.6718
1 6 2 5 3	17 2044	0.6049	1.5181	14.4765	0.6390
1.7216	16 2080	0 7531	1.0203	13.7462	0.6708
1.8148	16-0210	0 7296		13.0279	0.7110
1.9158	14-7591	0.6713	1 0150	12.4040	0.6009
2.0254	14-6947	0-6130	2 0 2 5 4	10 0034	0 5 2 5 1
2.1290	13.7793	0.6635	2.1290	8-8243	0.5971
2.2245	13 3534	0.6330	2.2245	9.6309	0.5771
2.3265	10.9676	0.6005	2.3265	8-6942	0.5473
2.4357	10.6650	0.5732	2.4357	8-8924	0.5206
2.5325	10.5278	0.6648	2.5325	5,9994	0-5952
2.6356	10.3914	0.5240	2.6356	6.0621	0.4630
2.7447	9.3910	0.6090	2.7447	5.6710	0.5359
2.8371	8.1695	0.5663	2.8371	6.9737	0.5007
2.9342	8.8608	0.5238	2.9342	7.1023	0.4869
3.0365	7.7552	0.4985	3.0365	7.1788	0.4847
3.1441	7.9339	0.4956	3.1441	10.5750	0.5081
3.2576	8.2128	0.4794	3.2576	17.4451	0.5642
3.3774	8.8983	0.4640	3.3774	24.5345	0.6135
3.4714	10.6272	0.6620	3.4714	30.7085	0.9173
3.2048	13.7976	0.4932	3.5698	22.1586	0.5765
3.07701	18.3522	0.7530	3.6720	10.1231	0.6463
3 8006	20.3220	0.0070	3.7791	4.8864	0.4144
3-9676	33.3209	0 9034	3.8905	2.4798	0.5669
4.0881	21-2859	0.0754	3.90/0	2.4893	0.5999
4.2135	8-6497	0.6285	4.0001	1.7004	0.5904
4.3005	4.9017	0.5520	4-3005	2 2021	0.5755
4.3903	4.2737	0-4987	4-3003	2.5051	0.5755
4.4829	2.3937	0.4801	4.4829	2.6712	0.6119
4.5785	3.0453	0.4662	4.5785	2-4421	0-6139
4.6771	2.9983	0.4610	4.6771	3.4205	0.6132
4.7790	2.7552	0.4683	4.7790	6.1667	0.5970
4.8843	3.1234	0.4601	4.8843	10.8804	0.6022
4.9930	3.2696	0.4673	4.9930	17.2698	0.6321
5.1055	4.2850	0.4819	5.1055	28.7818	0.7130
5.2217	4.7599	0.4899	5.2217	38.6080	0.7791
5.3420	8.8454	0.5288	5.3420	40.4336	0.7835
5.4665	14.2380	0.5884	5.4665	28.6297	0.6684
5.5955	24.0710	0.6899	5.5955	11.9486	0.4855
5.7290	39.7166	0.7917	5.7290	3.9762	0.3763
5.8673	47.5079	0.8335	5.8673	2.4007	0.3581
0.0108	33.9589	0.7082	6.0108	1.0347	0.3402
6 • 1 3 4 3	10.3411	U • 5469	6.1595	0.5068	0.3060
6.5159	0.8115	0.4332	6. 3139.	0.2733	0.2879
0 • 4 / 41 6 - 6405	2.5003	0.3826	6.4741	-0.4081	0.3110
6-8134	10044 0 6020	U•3991 0 4954	0.6405	0.3879	0.3554
6-00134	0.0720	U • 77270 () 4 2 7 1	0.8134	-0.0986	0.3707
7.1801	-0-0722	0-7211		-0.21212	0.3382
7.3746	-0.2093	0.2898	7.174744	-0 0470	0.2565
7.5772	0.1326	0.2185	7.5772	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	0.1452
					0.1030

LI 6 110	O CEG 7.	5 MEV		10160	LI	6]	.35 CEG	7.5 MEV
E AVG	DN/CE AVG	S.D. AVG	•	· ·	E A	VG	DN/CE AVG	S.D. AVG
0.3961	30.4344	2.4421			0	.3961	. 22.507	6 2.4134
0.4981	20.0127	1.4176			0	4 981	23.522	8 1.4078
0.5997	18.6581	1.0644			0	•5997	18.118	1 1.0357
0.7002	17.1812	0.9044			0	•7002	16.166	3 0.9026
0.8031	15,8094	0.7668			0	.8031	14.977	2 0.7725
0.9984	15.2227	0.7221			0	•9084	13.686	5 0.7208
1.0105	14.5306	0.6927			1	•0105	13.448	5 0.6982
1.1075	14.8969	0.7009			1	•1073	12.789	4 0./13/
1 21059	14.8895	0.6410			1	-2059	11.128	2 0.6555
1 4127	12.0000	0 6 2 5 3			Ļ			
1-5181	10 2957	0.5000			1	6101	9.441 10.742	7 U.0402
1-6253	10.2757	0.5000			1	4 2 5 2		- U.0209
1.7216	9-4377	0.6141			1	7214	7 953	1 0.6532
1.8148	9.2837	0.5797			1	- 8148	6-242	7 0.6364
1.9158	9.4631	0.5373			ī	-9158	6-265	7 0-6134
2.0254	9.0966	0.4928			2	0254	6.786	5 0.6431
2.1290	5.4437	0.5170			2	1290	4.190	7 0.8657
2.2245	5.8962	0.5017			2	.2245	5 5.132	8 1.0760
2.3265	5.6910	0.4796			2	.3265	6.433	3 0.89P4
2.4357	5.8270	0.4620			2	.4357	10+113	8 0.6940
2.5325	5.7040	0.5569			2	.5325	5 18.063	2 0.7802
2.6356	6.1191	0.4300			2	.6356	20.094	6 0.5825
2.7447	9.1619	0.5291			2	.7447	7.606	8 0.5203
2.8371	14.5242	0.5702			2	.8371	3.289	8 0.4404
2.9342	20.9345	0.6210			2	•9342	2 1.211	1 0.4110
3.0365	22.0087	0.6299			3	•0365	5 1.888	0 0.3970
3.1441	11.3710	0.5111			3	•1441	2.418	9 0.3701
3.2576	4.0652	0.4175			3	.2576	5 1.987	6 0.3496
3.3774	2.4840	0.4009			3	.3774	2.451	0 0.3401
3.4/14	2.8942	0.5681			3	•4714	2.278	9 C•4890
3.7078	2.5855	0.4037			5			
3 7701	2.0431	0 3004			2	- 7701	2.931	
3 9005	2 1450	0 5710			2	001191	L 40473 5 6.461	5 0.4025
3-9676	2-1875	0.5598			2	0.0474	0_41	2 C= 752 8 C= 6230
4-0881	3-2578	0-3618			4	0.000	בדייק (13_613	7 0.5828
4.2135	5.2354	0.5169			4	213	5 51.302	2 6.9804
4.3005	5.7431	0.5163			4	3005	5 40 . 518	2 0.8739
4.3903	10.4063	0.5711			4	.3903	3 17.829	2 0.6575
4.4829	19.1517	0.6763			4	.4824	9 6.167	9 0.5020
4.5785	33.8581	0.8080			4	.578	5 3.322	8 0.441j
4.6771	42.7909	0.8779			4	.677	L 2.072	8 0.3918
4.7790	42.1839	0.8444			4	+.7790	0 1.154	5 0.3430
4.8843	25.8395	0.6805			4	•8843	o.924	3 0.3268
4.9930	10.0060	0.4758			4	• 9930	0.754	5 C.Z979
5.1055	3.1672	0.3512			5	.105	5 0.264	0 0.3021
5.2217	1.9955	0.3053			5	.221	0.052	5 0.3058
5.3420	1.2189	0.3000			5	•3420	0.534	1 C•3267
5.4005	0.7/05	0.3107			לי פ	• 466		7 0.4386
5 7 2 9 0	0 4759	0.3040			2	······································		3 0.1503
5 9672	0 2 2 1 4	0.3323			2	- 1290	J U•4/4	L U+2098
6-0108	0.1350	0-2913						0 0.0001
6.1595	-0-0983	0-2731			4	5-150	5 -0.300 5 0.310	ο α_2791
6.3139	0-1344	0_2667				313	9 0_198	5 0.2997
6.4741	0.5955	0-2936				474	-0_581	2 0.3535
6.6405	-0.0771	0.3103			- F	.640	5 0.258	3 0.3852
6.8134	-0.3681	0.2826			ě	.813	4 -0.144	8 0.3029
6.9931	-0.2927	0.2437			é	.993	1 -0.071	2 C.2123
7.1801	0.2301	0.2085			1	.180	L 0.172	3 0.1920
7.3746	-0.2768	0.1848		·	1	.374	5 -0.280	1 0.1772
7.5772	0.2945	0.1622			1	1.5,77	2 0.004	5 0.1568

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LITHIUM 7	ELASTIC SCAT	TERING 7.	5 MEV	LOS ALAM	JS 1967		
	SECTIONS IN	TIONS INCL	NS PFR	478 MEV S Sterantan	IATE DR MI	LETRARNS	TOTAL
VISUAL FIT	CENTER OF	MASS SYS	TEM	STERAOIAN		CCI DAIMS	
C	OSINE DMEGA	SIGMA	OMEGA				
	+1.0	65	7.0				
	+0.9	46	0.0				
	+0.8	23	1.0				
	+0.6	16	4.0				
	+0.5	11	5.0				
	+0.4	8	0.5				
	+0.3	5	2 - 1				
	+0.1	5	0.8				
	+0.0	5	1.2				
	-0.1	5	2.1				
	-0.2	2	3•1 				
	-0.4	5	4 • 8				
	-0.5	5	4.6				
	-0.5	5	3.2				
	-0./	5	1.2				
	-0.9	4	4.0				
	-1.0	3	9.7				
ELASTIC	SCATTERING D	ATA CENTE	R OF MA	SS LI	7 7.5	MEV	
COS OMEGA	SIGMA DM	EGA	STANDAR				
€∎M∎ +Ω∎717	L⊕M⊕ 249-0		RELATIV 8-8	12.	5		
+0.473	105.2		4.7	6.	3		
+0.167	51.0		2.9	3.	6		
-0.144	52.8		3.0	3.	7		
-0.400	24•1 49-0		2.7	3.	6 4		
INTEGRAT	ED ELASTIC	CROSS SECT	ION 15	19 PLUS D	R MINUS	61 MILLI	BARNS
I TTHINM 7	INFLACTIC SC	ATTERING 1	0 4 438		105 41	AMPS 67	7.5MEV
LITHIUM 7 Cos omega	INELASTIC SC Sigma ome	ATTERING T GA S	0 4.63M	EV LEVEL	LOS AI NS	AMCS 67	7.5MEV
LITHIUM 7 COS DMEGA C.M.	INELASTIC SC SIGMA DME C.M.	ATTERING T GA S F	D 4.63M Standard Relative	EV LEVEL OEVIATIO ABSOLU	LOS AI NS TE	AMCS 67	7.5MEV
LITHIUM 7 COS OMEGA C.M. +0.661	INELASTIC SC SIGMA DME C.M. 10.7	ATTERING T GA S R	TANDARD RELATIVE 1.0	EV LEVEL DEVIATIO ABSOLU 1•1	LOSAI NS TE	AMCS 67	7.5ME V
LITHIUM 7 COS DMEGA C.M. +0.661 +0.382 +0.50	INELASTIC SC SIGMA DME C.M. 10.7 11.9	ATTERING I GA S F	0 4.63M TANDARD ELATIVE 1.0 1.1	EV LEVEL OEVIATIO ABSOLU 1.1 1.2	LOSAI NS TE	AMCS 67	7.5MEV
LITHIUM 7 COS OMEGA C.M. +0.661 +0.382 +0.050 -0.265	INELASTIC SC SIGMA DME C.M. 10.7 11.9 14.2 10.3	ATTERING I GA S F	0 4.63M TANDARD RELATIVE 1.0 1.1 1.3 0.9	EV LEVEL OEVIATIO ABSOLU 1.1 1.2 1.4 1.0	LOSAI NS TE	-AMCS 67 '	7.5MEV
LITHIUM 7 COS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.565	INELASTIC SC SIGMA DME C.M. 10.7 11.9 14.2 10.3 6.9	ATTERING I GA S F	10 4.63M STANDARD RELATIVE 1.0 1.1 1.3 0.9 0.6	EV LEVEL OEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7	LOS AI NS TE	AMCS 67	7.5MEV
LITHIUM 7 COS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.565 -0.827	INELASTIC SC SIGMA DME C•M• 10•7 11•9 14•2 10•3 6•9 4•7	ATTERING I GA S F	TO 4.63M STANDARD RELATIVE 1.0 1.1 1.3 0.9 0.6 0.5	EV LEVEL DEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5	LOS AI NS TE	AMCS 67	7.5MEV
LITHIUM 7 COS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.565 -0.827 INTEGRATE	INELASTIC SC SIGMA DME C•M• 10•7 11•9 14•2 10•3 6•9 4•7 ED CROSS SEC	ATTERING I GA S F	T 4.63M TANDARD RELATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR CALL	EV LEVEL OEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 4 (2)	LOS AI NS TE 2 MILLI	AMCS 67	7.5MEV
LITHIUM 7 COS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.565 -0.827 INTEGRATE VISUAL FI COS OMEGA	INELASTIC SC SIGMA DME C•M• 10•7 11•9 14•2 10•3 6•9 4•7 ED CROSS SEC T CENTER OF SIGMA DME	ATTERING T GA S F TION 122 MASS SYST GA	TO 4.63M TANDARD RELATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LIT	EV LEVEL OEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOSAI NS TE 2 MILLI STATE	AMCS 67 IBARNS 7.5MEV	7.5MEV
LITHIUM 7 CDS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.565 -0.827 INTEGRATE VISUAL FI CDS OMEGA +1.0	INELASTIC SC SIGMA DME C•M• 10.7 11.9 14.2 10.3 6.9 4.7 5D CROSS SEC T CENTER OF SIGMA DME 9.7	ATTERING I GA S TION 122 MASS SYSI GA	TO 4.63M TANDARD RELATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LIT	EV LEVEL OEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOSAI NS TE 2 MILLI STATE	AMCS 67 IBARNS 7.5MEV	7.5MEV
LITHIUM 7 CDS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.565 -0.827 INTEGRATE VISUAL FI CDS OMEGA +1.0 +0.9	INELASTIC SC SIGMA DME C•M• 10.7 11.9 14.2 10.3 6.9 4.7 5D CROSS SEC T CENTER OF SIGMA DME 9.7 9.9	ATTERING T GA S TION 122 MASS SYST GA	10 4.63M TANDARD RELATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LI7	EV LEVEL OEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOSAI NS TE 2 MILLI STATE	AMCS 67 IBARNS 7.5MEV	7.5MEV
LITHIUM 7 CDS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.565 -0.827 INTEGRATE VISUAL FI CDS OMEGA +1.0 +0.9 +0.8	INELASTIC SC SIGMA DME C.M. 10.7 11.9 14.2 10.3 6.9 4.7 ED CROSS SEC T CENTER OF SIGMA DME 9.7 9.9 10.2	ATTERING T GA S TION 122 MASS SYST GA	10 4.63M TANDARD ELATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LI7	EV LEVEL 0EVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOSAI NS TE 2 MILLI STATE	AMCS 67 IBARNS 7.5MEV	7. 5ME V
LITHIUM 7 CDS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.5(5 -0.827 INTEGRATE VISUAL FI COS OMEGA +1.0 +0.9 +0.8 +0.7 +0.6	INELASTIC SC SIGMA DME C.M. 10.7 11.9 14.2 10.3 6.9 4.7 ED CROSS SEC T CENTER OF SIGMA DME 9.7 9.9 10.2 10.5 11.0	ATTERING T GA S TION 122 MASS SYST GA	0 4.63M TANDARD ELATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LI7	EV LEVEL 0EVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOSAI NS TE 2 MILLI STATE	AMCS 67 IBARNS 7.5MEV	7.5MEV
LITHIUM 7 CDS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.827 INTEGRATE VISUAL FI COS OMEGA +1.0 +0.9 +0.8 +0.7 +0.6 +0.5	INELASTIC SC SIGMA DME C.M. 10.7 11.9 14.2 10.3 6.9 4.7 CROSS SEC T CENTER OF SIGMA DME 9.7 9.9 10.2 10.5 11.0 11.5	ATTERING I GA S TION 122 MASS SYST GA	0 4.63M TANDARD ELATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LI7	EV LEVEL OEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOSAI NS TE 2 MILLI STATE	AMCS 67 IBARNS 7.5MEV	7.5MEV
LITHIUM 7 CDS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.827 INTEGRATE VISUAL FI COS OMEGA +1.0 +0.9 +0.8 +0.7 +0.6 +0.5 +0.4	INELASTIC SC SIGMA DME C.M. 10.7 11.9 14.2 10.3 6.9 4.7 ED CROSS SEC T CENTER OF SIGMA DME 9.7 9.9 10.2 10.5 11.0 11.5 12.3	ATTERING I GA S TION 122 MASS SYSI GA	0 4.63M TANDARD ELATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LI7	EV LEVEL OEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOSAI NS TE 2 MILLI STATE	AMCS 67 IBARNS 7.5MEV	7.5MEV
LITHIUM 7 CDS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.827 INTEGRATE VISUAL FI CDS OMEGA +1.0 +0.9 +0.8 +0.7 +0.6 +0.5 +0.4 +0.3	INELASTIC SC SIGMA DME C.M. 10.7 11.9 14.2 10.3 6.9 4.7 CROSS SEC T CENTER OF SIGMA DME 9.7 9.9 10.2 10.5 11.0 11.5 12.3 13.2	ATTERING I GA S TION 122 MASS SYSI GA	0 4.63M TANDARD LATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LI7	EV LEVEL OEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOSAI NS TE 2 MILLI STATE	AMCS 67 IBARNS 7.5MEV	7.5MEV
LITHIUM 7 CDS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.827 INTEGRATE VISUAL FI CDS OMEGA +1.0 +0.9 +0.8 +0.7 +0.8 +0.5 +0.4 +0.3 +0.2 +0.21	INELASTIC SC SIGMA DME C.M. 10.7 11.9 14.2 10.3 6.9 4.7 ED CROSS SEC T CENTER OF SIGMA DME 9.7 9.9 10.2 10.5 11.0 11.5 12.3 13.2 13.0	ATTERING I GA S TION 122 MASS SYSI GA	0 4.63M TANDARD LATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LIT	EV LEVEL OEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOSAI NS TE 2 MILLI STATE	AMCS 67 IBARNS 7.5MEV	7.5MEV
LITHIUM 7 CDS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.565 -0.827 INTEGRATE VISUAL FI CDS OMEGA +1.0 +0.9 +0.8 +0.7 +0.6 +0.5 +0.4 +0.2 +0.1 0.0	INELASTIC SC SIGMA DME C.M. 10.7 11.9 14.2 10.3 6.9 4.7 ED CROSS SEC T CENTER OF SIGMA DME 9.7 9.9 10.2 10.5 11.0 11.5 12.3 13.2 13.3 13.0 12.5	ATTERING I GA S TION 122 MASS SYST GA	0 4.63M TANDARD RELATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LIT	EV LEVEL OEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOSAI NS TE 2 MILLI STATE	AMCS 67 IBARNS 7.5MEV	7.5MEV
LITHIUM 7 CDS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.565 -0.827 INTEGRATE VISUAL FI CDS OMEGA +1.0 +0.9 +0.8 +0.7 +0.8 +0.7 +0.6 +0.5 +0.4 +0.3 +0.2 +0.1 0.0 -0.1	INELASTIC SC SIGMA DME C•M• 10•7 11•9 14•2 10•3 6•9 4•7 ED CROSS SEC T CENTER OF SIGMA DME 9•7 9•9 10•2 10•5 11•0 11•5 12•3 13•2 13•3 13•0 12•5 11•7	ATTERING I GA S F TION 122 MASS SYSI GA	0 4.63M TANDARD RELATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LI7	EV LEVEL DEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOSAI NS TE 2 MILLI STATE	AMCS 67 IBARNS 7.5MEV	7.5MEV
LITHIUM 7 CDS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.565 -0.827 INTEGRATE VISUAL FI CDS OMEGA +1.0 +0.9 +0.8 +0.7 +0.6 +0.5 +0.4 +0.3 +0.2 +0.1 0.0 -0.1 -0.2 -0.2	INELASTIC SC SIGMA DME C•M• 10.7 11.9 14.2 10.3 6.9 4.7 ED CROSS SEC T CENTER OF SIGMA DME 9.7 9.9 10.2 10.5 11.0 11.5 12.3 13.2 13.3 13.0 12.5 11.7 10.8	ATTERING I GA S TION 122 MASS SYSI GA	0 4.63M TANDARD RELATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LI7	EV LEVEL DEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOS AI NS TE 2 MILLI STATE	AMCS 67	7.5MEV
LITHIUM 7 CDS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.565 -0.827 INTEGRATE VISUAL FI CDS OMEGA +1.0 +0.9 +0.8 +0.7 +0.6 +0.5 +0.4 +0.3 +0.2 +0.1 0.0 -0.1 -0.2 -0.3 -0.4	INELASTIC SC SIGMA DME C•M• 10•7 11•9 14•2 10•3 6•9 4•7 ED CROSS SEC T CENTER OF SIGMA DME 9•7 9•9 10•2 10•5 11•0 11•5 12•3 13•2 13•3 13•0 12•5 11•7 10•8 9•8 8-7	ATTERING I GA S TION 122 MASS SYST GA	0 4.63M TANDARD RELATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LIT	EV LEVEL DEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOS AI NS TE 2 MILLI STATE	AMCS 67	7.5MEV
LITHIUM 7 CDS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.565 -0.827 INTEGRATE VISUAL FI CDS OMEGA +1.0 +0.9 +0.8 +0.7 +0.6 +0.5 +0.4 +0.3 +0.2 +0.1 0.0 -0.1 -0.2 -0.3 -0.4 -0.5	INELASTIC SC SIGMA DME C•M• 10•7 11•9 14•2 10•3 6•9 4•7 ED CROSS SEC T CENTER OF SIGMA DME 9•7 9•9 10•2 10•5 11•0 11•5 12•3 13•2 13•3 13•0 12•5 11•7 10•8 9•8 8•7 7•7	ATTERING I GA S TION 122 MASS SYST GA	0 4.63M TANDARD RELATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LIT	EV LEVEL DEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOS AI NS TE 2 MILLI STATE	AMCS 67	7.5MEV
LITHIUM 7 CDS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.565 -0.827 INTEGRATE VISUAL FI CDS OMEGA +1.0 +0.9 +0.8 +0.7 +0.6 +0.5 +0.4 +0.3 +0.2 +0.1 0.0 -0.1 -0.2 -0.3 -0.4 -0.5 -0.6	INELASTIC SC SIGMA DME C.M. 10.7 11.9 14.2 10.3 6.9 4.7 5D CROSS SEC T CENTER OF SIGMA DME 9.7 9.9 10.2 10.5 11.0 11.5 12.3 13.2 13.3 13.0 12.5 11.7 10.8 9.8 8.7 7.7 6.7	ATTERING I GA S TION 122 MASS SYST GA	0 4.63M TANDARD RELATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LIT	EV LEVEL DEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOS AI NS TE 2 MILLI STATE	AMCS 67	7. 5ME V
LITHIUM 7 CDS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.827 INTEGRATE VISUAL FI CDS OMEGA +1.0 +0.9 +0.8 +0.7 +0.6 +0.5 +0.4 +0.3 +0.2 +0.1 0.0 -0.1 -0.2 -0.3 -0.4 -0.5 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.6 -0.7 -0.7 -0.6 -0.7 -0.7 -0.6 -0.7 -0.7 -0.6 -0.7 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.6 -0.7 -0.7 -0.6 -0.7 -0.7 -0.6 -0.7 -0	INELASTIC SC SIGMA DME C.M. 10.7 11.9 14.2 10.3 6.9 4.7 ED CROSS SEC T CENTER OF SIGMA DME 9.7 9.9 10.2 10.5 11.0 11.5 12.3 13.2 13.3 13.0 12.5 11.7 10.8 9.8 8.7 7.7 6.7 5.8	ATTERING I GA S TION 122 MASS SYST GA	0 4.63M TANDARD RELATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LIT	EV LEVEL DEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOS AI NS TE 2 MILLI STATE	AMCS 67	7. 5ME V
LITHIUM 7 CDS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.565 -0.827 INTEGRATE VISUAL FI CDS OMEGA +1.0 +0.9 +0.8 +0.7 +0.6 +0.5 +0.4 +0.3 +0.2 +0.1 0.0 -0.1 -0.2 -0.3 -0.4 -0.5 -0.6 -0.7 -0.8 -0.2	INELASTIC SC SIGMA DME C.M. 10.7 11.9 14.2 10.3 6.9 4.7 D CROSS SEC T CENTER OF SIGMA DME 9.7 9.9 10.2 10.5 11.0 11.5 12.3 13.2 13.3 13.0 12.5 11.7 10.8 9.8 8.7 7.7 6.7 5.8 4.9	ATTERING I GA S TION 122 MASS SYST GA	0 4.63M TANDARD RELATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LIT	EV LEVEL DEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOS AI NS TE 2 MILLI STATE	AMCS 67	7. 5ME V
LITHIUM 7 CDS OMEGA C.M. +0.661 +0.382 +0.050 -0.265 -0.5(5 -0.827 INTEGRATE VISUAL FI COS OMEGA +1.0 +0.9 +0.8 +0.7 +0.6 +0.5 +0.4 +0.3 +0.2 +0.1 0.0 -0.1 -0.2 -0.3 -0.4 -0.5 -0.6 -0.9 -1.0	INELASTIC SC SIGMA DME C.M. 10.7 11.9 14.2 10.3 6.9 4.7 CROSS SEC T CENTER OF SIGMA DME 9.7 9.9 10.2 10.5 11.0 11.5 12.3 13.2 13.3 13.0 12.5 11.7 10.8 9.8 8.7 7.7 6.7 5.8 4.9 4.2 3.1	ATTERING I GA S TION 122 MASS SYST GA	0 4.63M TANDARD ELATIVE 1.0 1.1 1.3 0.9 0.6 0.5 PLUS OR FEM LIT	EV LEVEL DEVIATIO ABSOLU 1.1 1.2 1.4 1.0 0.7 0.5 MINUS 1 TO 4.63	LOS AI NS TE 2 MILLI STATE	AMCS 67	7. 5ME V

SIGMA INELASTIC CONTI LABORATORY SYSTEM	INUDUS NI	EUTRONS L	.17 7.5	MEV		
LAS ANGLE STAS STGM	AFLOW 9	S-D- STGN	A AROVE	S-0-	SUM	S-0-
39 DEG 1_0WEV	8-8	6_4	24.8	2.7	33.6	5.2
55 DEC 0 5NEV	4 1	▼● ▼ つ 1	22 4	2 7	27 5	202 / 2
72 EDEC O ENEV	7.1		23.5	5.1	25 1	2 0
	5.0	1.0	21.5	2.4	22+1	2.0
90 DEG U.SMEV	3.0	1.8	17.3	1.9	20.9	2.0
110 UEG 0.4MEV	4.1	2•1	16.3	1.8	20.4	2.8
135 DEG 0.4MEV	4.1 2	2.1	13.6	1.5	17.7	2.6
S.O. STANDARC DEVIAT	IONS ARE	ABSOLUTE				
RELATIVE ERRCRS ARE A	\80UT C•!	5 OF THESE				
INTEGRATED CROSS SEC	CTION 3	11 PLUS (DR MINUS	37 MIL	LIBARNS	5
VISUAL FIT LI7 CONTINU	JUM 7.51	MEV ALL (CONTINUOU	S NEUTR	ONS	
COS THETA LAB SIGN	A THETA	LA8				
+1.0	38.6					
+0.9	38.4					
+0.8	38.0					
+0.7	36.8					
+0.6	34.8					
+0.5	30-8					
+0-4	27.2					
+0-3	25.0					
+0.2	22 6					
+0 1	22.0					
+0.0	22.07					
-0.1	21.44					
-0.1	20.0					
-0.2	20.0					
-0.3	19.4					
-0.4	19.0					
-0.5	18.4					
-0.6	18.0					
-0.7	17.7					
-0.8	17.4					
-0.9	17.1					
-1.0	16.8					

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177	39 CEG 7-5	MEV	177		
F AVG	DATE AVG S-				
0.3961	93-1072	5.2187	0 3041	-12 9414	3.00 AVG
0.4981	1-4917	1.0078	0.4091	-12+0014	4.5118
0.5997	2-1800	1-4108	0.5007	14+/110	1.4609
0.7002	2.2834	1 2149	0.3997	11.0707	1.0725
0.8031	2 0 4 5 1	1 0 2 7 1	0.7002	13.0707	0.9340
0 0 0 0 0 0	5.7431	1.0271	0.8031	13.5115	0.7897
1 0105	7 4 247	0.9024	0.9084	12.7370	0.7493
1 1073	1.4241	0.9197	1.0105	13.1201	0.7261
1.2050	8.2011	0.9463	1.1073	13.4846	0.7677
1.2059	9.0117	0.8848	1.2059	14.4528	0.7030
1.3105	10.4514	0.8677	1.3105	13.5310	U.7056
1.4127	9.0803	0.8837	1.4127	12.7602	0.7091
1.5181	9.6027	0.8059	1.5181	14.5129	0.6627
1.6253	9.9741	0.8423	1.6253	15.8718	0.7060
1.7216	12.4085	0.9276	1.7216	16.9493	0.7756
1.5148	12.6546	0.9238	1.8148	20.1835	0.7753
1.4158	14.9850	0.9003	1.9158	26.2810	0.7697
2.0254	15.9593	0.8564	2.0254	41.8749	0 • 8150
2.1290	20.6816	0.9734	2.1290	56.4329	0.9990
2.2245	32.5235	1.0130	2.2245	49.0010	0.9225
2.3265	50.7327	1.0722	2.3265	28.2670	0.7589
2.4357	51.6036	1.0403	2.4357	13.0814	0.6227
2.5325	32.0944	1.0856	2.5325	9.3480	0.7079
2.6356	15.6855	0.7548	2.6356	7.4645	0.5308
2.7447	7.2254	0.8358	2.7447	4-8835	0-6168
2.8371	4.0058	0.7849	2.8371	6.5917	0.5845
2.9342	5-8414	0.7332	2.9342	4.9793	0.5482
3.0365	6-0547	0.6711	3-0365	4-6463	0.5091
3.1441	6-3534	0.6290	3-1441	4-8989	0-4811
3.2576	5-7163	0.5961	3-2576	4.7886	0-4641
3.5774	6-0323	0.5850	3,3774	4 5 6 7 3	0 4430
3.4714	6-3886	0 8245	3-4714	4-8380	0 4104
3-5698	6-3914	0 5429	3-5608	4 2627	0.6104
3-6720	6-7360	0 7474	3-6720	3 2 1 5 1	0 5774
3 7791	6-1299	0 5152	3.7791	4 1500	0 2074
3.8905	6 3180	0 7100	3 9005	7 7 0 2 0	0.2714
3.9676	6-8075	0 7 201	3-9676	3 6/3	0.5644
4-0881	8 8 8 2 0	0 6177	6 0991	5.045	0.5487
4-2135	11-1361	0 7490	4 2125	5.4120	0.4194
4.3005	12-0804	0 7770	4 2005	2.0247	0.0174
4 4003	12.0000	0.7070	4.3003	4.2201	0.6097
4 4 9 20	10 3510	0.7978	4.3903	2.2194	0.5811
	10.3057	0.7666	4.4829	4.8606	6.5636
4.5705	10.3857	0.7501	4.5/85	5.0839	0.5249
4 7700	0.9978	0.7030	4.0//1	5.1105	0.5480
4 0 0 4 3	9.2820	0.6909	4 • 7 7 90	6.5956	0.5355
4.0045	10.8121	0.6855	4.8843	7.2001	0.5332
4.9930	11.4683	0.6953	4.9930	7.3684	0.5455
5.1055	12.7446	0.7202	5.1055	7.4977	0.5311
5.2217	12.8094	0.6962	5.2217	8.3680	0.5211
5.3420	15.1312	0.7025	5.3420	10.0946	0.5125
5.4665	14.7964	0.6704	5.4665	11.0659	0.5240
5.5955	16.9205	0.6848	5.5955	13.8849	0.5504
5.7290	19.2329	0.7070	5.7290	21.0899	0.6356
5.8673	23.9804	0.7381	- 5.8673	31.4637	0.7210
6.0108	30.0844	0.7620	6.0108	46.1421	0.5091
6.1595	41.9151	0.8358	6.1595	62.3052	0.9080
6.3139	67.6353	0 . 99 7 0	6.3139	87.5810	1.0310
6.4741	109.7988	1.2553	6.4741	134.9233	1.2723
6.6405	202.5911	1.6393	6.6405	147.4934	1.3238
6.8134	369.2012	2.1397	6.8134	80.1969	1-0226
6.9931	404.4846	2.2663	6.9931	24-2465	0_7274
7.1801	204.8347	1.7806	7.1801	6.4999	0-6136
7.3746	41.2349	1.2015	7.3746	1-3849	0-4794
7.5772	4.2663	0.7754	7.5772	1.4572	0.3309

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LT 7 7	72.5 CEG 7.	5 MEV		, L İ 7	90 CEG 7.	5 MEV
EAVG	ON/CE AVG	S.D. AVG	· · ·	E AVG	ON/CE AVG	S.D. AVG
0.3961	20.3044	2.7448	·	0.3961	22.3228	2.6782
0.4981	11.5955	1.3919		_' 0 • 4981	12.6511	1.4209
0.5997	13.8296	1.0400		0.5997	13.3840	1.0726
0.7002	12.8901	0.9092		0.7002	13.1830	0.9213
0.8031	12.0690	0.7406		0.8031	9.2146	0.7567
0.9084	12.8107	0 4703		0.9084	11.8904	0.7015
1.1073	14-0777	0.7153		1 1073	11.9225	0.0000
1.2059	13.1256	0.6644	•	1.2059	12-1480	0.6493
1.3105	13.2597	0.6534		1.3105	14.9443	0.6546
1.4127	13.8943	0.6542		1.4127	22.2876	0.7099
1.5181	17.0776	0.6504		1.5181	35.2011	0.7530
1.6253	23.9999	0.7172		1.6253	36.1827	0.7952
1.7216	34.0679	0.8561		1.7216	21.4293	0.7517
1.0150	47.0095	0.9123		1.8148	10.4973	0.6159
2 0254	43.5194 24 6630	0.6410		1.9158	7.1417	0.5332
2-1290	9-6929	0.6079		2.0254	3.0000	0.4920
2.2245	7.3530	0.5601		2.2245	3-8486	0.5063
2.3265	5.1745	0.5297		2.3265	2.7318	0.4726
2.4357	4.4949	0.5001		2.4357	2.4105	0.4482
2.5325	4.5180	0.5774		2.5325	3.3199	0.5342
2.6356	4.3833	0.4540		2.6356	2.4563	0.4144
2.7447	4.5192	0.5370		2.7447	2.9386	0.4714
2.8371	3.8089	0.4994		2.8371	3.0893	0.4396
2.9342	4.0082	0-4379		2.9342	2.6654	0.4319
3-1441	2-5318	0.4165		3.0.905	3.4271	0.4184
3.2576	3-5126	0.4104		3.2576	3 3848	0.3981
3.3774	3.5599	0.3881		3.3774	3.7933	0.3944
3.4714	3.7196	0.5312		3.4714	4.7140	0.5599
3.5698	3.4473	0.3666		3.5698	4.4848	0.3845
3.6720	1.8183	0.4899		3.6720	5.5575	88ذ5•2
3.7791	3.3069	0.3534		3.7791	3.9453	0.3859
3.8905	3.5725	0.5281		3.8905	3.6836	0.5662
4-0881	3-8155	0.3823		3.9676	4.5799	0.5876
4.2135	4.0396	0.5481		4.2135	3-6539	0.5716
4.3005	3.9972	0.5224		4.3005	5.5820	0.5938
4.3903	3.7651	0.4760		4.3903	5.8394	0.6058
4.4829	4.0611	0.4909		4.4829	5.5254	0.6124
4.5785	4.0150	0.4673		4.5785	6.5934	0.6305
4.6771	4.7151	0.4735		4.6771	8.2835	0.6405
4.7790	4.2002	0.4701		4.7790	10.4881	0.6377
4.0043	6.3687	0.4965		4.0043	11.9318	0.6800
5,1055	7.8326	0.5146		5-1055	39-4575	0.7958
5.2217	10.9575	0.5524		5.2217	45.9094	0.8239
5.3420	18.1444	0.6171		.5.3420	53.0552	0.8647
5.4665	29.7461	0.7202		5.4665	60.0361	0.9020
5.5955	40.6858	0.8080		5,5955	58.3442	0.8839
5.7290	49.4727	0.8462		5.7290	40.0928	0.7449
5.86/3	50.0739	0.8055		5.8673	15.3566	0.5130
6-1505	46_2919	0.7669		0.ULU8	4.9088	0.3292
6 3139	26.4614	0.6107		6.3130	1,1397	0,3034
6.4741	10.8333	0.4748		6.4741	0.4632	0.3043
6.6405	4.8505	0.4211		6.6405	0.2228	C-3448
6.8134	1.6991	0.4232		6.8134	-0.0967	0.3627
6.9931	0.8244	0.4215		6.9931	0.4342	0.3289
7.1801	0.6813	0.3709		7.1801	-0.0983	0.2574
7.3746	-0.0602	0.2822		7.3746	-0.4316	0.2036
7.5772	0.2057	0.2129		1.5112	U.I.3/9	U.∎1(22

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1 7 110	FEG 7.		17 7 13	5 DEG 7.5	MEV
E AVG	DN/CE AVG		EAVG	DN/CE AVG	S.O. AVG
0,3961	17-4756	2.2887	0.3961	17.6419	2.3729
0.4981	14.3203	1.3397	0.4981	17.5606	1.3610
0.5997	12.0896	0.9924	0.5997	12.5210	0.9919
0.7002	11.8892	0.8433	0.7002	10.7845	0.8581
0.8031	10.6265	0.7110	0.8031	10.8183	0.7353
0.9084	11.6068	0.6760	0.9084	11.8762	0.6967
1.0105	11.8683	0.6527	1.0105	17.6041	0.7099
1.1073	12.2565	0.6593	1.1073	20.7508	0.7520
1.2059	21.2745	0.6626	1.2059	11.6220	0.6458
1.3105	29.6571	0.7158	1.3105	6.3133	0.6022
1.4127	19.9610	0.6645	1.4127	5.0193	0.5791
1.5151	8.6678	0.5572	1.5181	2.2420	0.5755
1.7214	2.3(32	0.5400	1 7216	3 9071	0.6035
1 9149	2 0 2 4 1	0.5100	1-8148	3-0777	0.5944
1 0159	3,2032	0.4596	1-9158	2.5346	0.5676
2.0254	3-7237	0-4235	2.0254	2.0740	0,5913
2.1290	. 2.7074	0.4679	2,1290	1.3660	0.8207
2.2245	3 2 5 4 9	0.4551	2.2245	3.1126	1.0314
2.3265	2.1753	0.4235	2.3265	2.5418	0.8480
2.4357	2.7703	0.4128	2.4357	2.6119	0.6202
2.5325	2.6784	0.4987	2.5325	2.2767	0.6051
2.6356	2.5694	0.3772	- 2.6356	1.9572	0.4097
2.7447	2.7009	0.4280	2.7447	3.1132	0.4519
2.8371	3.1198	0.4136	2.8371	4.3981	0.4467
2.9342	3.3923	0.4047	2.9342	4.1764	C•4427
3.0365	4.6680	0.4290	3.0365	2.9763	0.4040
3.1441	5.3328	0.4263	3.1441	3.3855	0.3770
3.2576	4.9014	0.4141	3.2576	3.5083	0.3649
3.3/14	4.0792	0.4069	3.3114	3.9090	0.5135
3.4/14	4.2390	0.5715	2.5409	4.0011	0.2557
3 6730	4.0414	0 5921	3-6720	4-1988	0-5301
3.7791	4.7810	0.4165	3,7791	5-0840	0.3997
3-8905	5-5891	0.6009	3.8905	6.2761	0.5818
3.9676	4.0142	0.5672	3.9676	8.0378	0.5905
4.0881	6.1646	0.3814	4.0881	17.1369	0.4697
4.2135	7.2279	0.5305	4.2135	28.7430	0.7621
4.3005	8.9009	0.5460	4.3005	32.0851	0.7817
4.3903	13.4249	0.5940	4.3903	33.6781	0.8075
4.4829	20.0122	0.6684	4.4829	50.2849	0.9396
4.5785	30.8799	0.7620	4.5785	71.2015	1.0738
4.6771	39.8921	0.8343	4.6771	63.5071	1.0019
4.7790	47.1591	0.8661	4.7790	31.1582	0.7230
4.8843	57.0944	0.9276	4.8843	9.1010	0.3400
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5-4665	4-6653	0.3693	5-4665	-0-1715	0.3276
5-5955	1,9849	0-3263	5.5955	0.1668	0.3441
5.7290	1.3748	0.3360	5.7290	0.5601	0.3517
6.0108	0.5252	0.2875	5.8673	0.3597	0.3305
6.1595	0.5436	0.2746	6.0108	0.3218	0.3031
6.3139	0.1903	0.2578	6.1595	0.5803	0.2723
6.4741	0.4032	0.2795	6.3139	-0.1045	0.2856
6.6405	-0.2347	0.2959	- 6.4741	-0.2720	0.3475
6.8134	-0.0366	0.2777	6.6405	0.1007	0.3717
6.9931	0.0104	0.2404	6.8134	0.1633	0.2997
7.1801	0.1962	0.1999	6.9931	0,0785	0.2115
7.3746	-0.1153	0.1815	7.1801	0.2896	0.1918
1.5/12	U. U784	0.1208		-0.0311	0.1808
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APPENDIX B

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ENERGY SPECTRA

The laboratory cross sections in mb/sr-MeV, on a log scale, are plotted versus scattered neutron energy.

In these spectra the elastic and inelastic scattering peaks have not been corrected for multiple scattering and attenuation. These spectra are intended to show the continuum neutron distributions, which have been corrected properly. The error bars are statistical standard deviations only.

The extrapolations below the cut-off energy are not shown. The procedure for such extrapolation is discussed in the text.

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1LI 72-50 5.74 MeV



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1 LI 900 5,74 MeV



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⁶Li 550 7.5 Mav



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APPENDIX C

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ANGULAR DISTRIBUTIONS

The visual fits to the differential cross sections for inelastic scattering are given as functions of $\cos \Omega$ in the center-of-mass system. The distributions for continuum neutrons have been integrated over energy.

⁶Li Inelastio Scattering to 2.16 MeV

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⁵Li inelastic Scattering to 2.16 MsV Level 5.74 MeV

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⁶Li Inelastic Scattering to 2.18 MeV Level 7.5 MeV

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⁷Li Inelastic Scattering to 4.63 MeV Level 7.5 MeV

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⁶LI Continuum Neutrons 4.83 MeV



⁶Li Continuum Neutrons 5.74 MeV

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⁶Li Coptiouum Neutrons 7.5 MeV

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⁷Li Continuum Neutrons 5.74 MeV

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