**Measurement of the Neutron Total Cross
Section of Silicon from 5 eV to 730 keV**

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MASTER

OAK RIDGE NATIONAL LABORATORY

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Neutron Physics Division

MEASUREMENT OF THE NEUTRON TOTAL CROSS SECTION OF SILICON
FROM 5 eV TO 730 keV

D. C. Larson, C. H. Johnson*, J. A. Harvey* and N. W. Hill**

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*Physics Division

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ABSTRACT

Neutron transmission through natural silicon samples has been measured for neutron energies between 5 eV and 730 keV. The Oak Ridge Electron Linear Accelerator (ORELA) was used to provide the neutrons. The 80-m flight path with a ^6Li glass detector was used for the low energy measurement, and the 200-m flight path with a NE-110 detector was used for the higher energy measurements. The 1,488 resulting values are tabulated and compared with the current ENDF/B-IV evaluation.

INTRODUCTION

During the re-evaluation (LA75) of silicon for ENDF/B-IV, an absence of high resolution total cross section data was noted below 200 keV. The good resolution data (0.12 ns/m) of Perey, Love and Kinney (PE72) was available from 200 keV to 20 MeV, and a measurement by Schrack, Schwartz and Heaton (SC71) of similar quality was available from 500 keV to 20 MeV. The data of Cierjacks et al. (CI68) also spanned the region from 500 keV to 20 MeV, but was not consistent in normalization with the previously mentioned measurements, although of somewhat better energy resolution. In order to provide high resolution data up to 500 keV, as well as to resolve some discrepancies in the existing sets of data, we measured the transmission of neutrons through two samples of silicon. We observe several new resonances, and provide more detail for previously observed resonances, in particular for the 55-keV and 180-keV resonances.

EXPERIMENTAL PROCEDURE

The silicon samples consisted of two nearly identical pieces of transistor grade silicon, 23 cm in diameter and 0.75 cm thick, having thicknesses $n = 0.0370$ and $n = 0.0376$ atoms/barn, respectively.

Two different experimental setups were used for the measurement. For the data from a few eV to a few tens of keV, the 80-m flight path was used, in conjunction with a 1.3-cm thick, 11-cm diameter ^6Li scintillation detector. The ORELA beam burst width was 5.5 ns with a repetition rate of 160 sec^{-1} , and 2 kW of power on the target. Two filters were used in the neutron beam; 0.60 cm of lead to diminish the gamma flash

produced when the electron beam strikes the water-moderated Ta target, and a 300 mg/cm^2 ^{10}B filter to eliminate overlap of low energy neutrons from preceding bursts. For this measurement, both samples were inserted in the beam for a total sample thickness $n = 0.0746$ atoms/barn.

Higher energy data from a few tens of keV to 730 keV were acquired on the 200-m flight path with a NE-110 proton recoil detector. The beam burst width was 5 ns with a repetition rate of 1000 sec^{-1} , and 10 kW of power on the target. Filters in the flight path included 2.0 cm of uranium to reduce the gamma flash, and 300 mg/cm^2 of ^{10}B to reduce the flux of low energy neutrons. The $n = 0.0376$ atoms/barn sample was used for this measurement.

The two measurements overlap from about 20 to 150 keV and the resulting cross sections are in good agreement, except over very narrow resonances, where the energy resolution at the 80-m flight path was comparable to the widths of the resonances.

A neutron source monitor is used to normalize the sample in and sample out data to the same neutron source intensity. Alternation of the sample in and out of the beam was under control of the data taking program. A typical cycle time was about thirty minutes, and total beam time for the two runs was about 110 hours. Neutron energies are determined by the time-of-flight method, utilizing the gamma flash as a start signal and detection of the neutron as a stop signal. The width of the time-of-flight channels was adjusted with the data acquisition program so as to have at least three channels per resolution width over the neutron energy range of interest in the experiment. A more detailed description of the experimental system can be found in Ref. (LA76).

DATA REDUCTION

The data were corrected for deadtime effects, with the largest correction being 15% in the cross section at 160 keV for the 80-m data, and 1.1% at 640 keV for the 200-m data. Corrections were then made for the background components. For the 80-m measurement, above 10 keV the largest background source is 2.2 MeV gamma rays from neutron capture in the water moderator surrounding the Ta target. This background is about 3% of the open beam at 14 keV. Below 400 eV, the room background dominates and is $\sim 0.2\%$ of the open beam at 400 eV, rising to $\sim 10\%$ at 7.6 eV.

For the 200-m measurement, corrections are made for constant room background, 2.2-MeV gamma rays from capture in the water moderator, and 478-keV gamma rays resulting from the $^{10}\text{B}(n,\alpha\gamma)$ reaction with the boron in the Pyrex face of the photomultiplier. To aid in the background determination, we record four 25,000 channel spectra. Each spectrum is characterized by a different lower and upper cutoff on the proton recoil energy of the NE-110 detector. This technique serves to approximately isolate the different background components, even in the presence of the neutron flux. After removing the various background components from each of the four spectra, we then select from each spectrum regions based on total counts and maximum count to background ratio and sum these regions to obtain the final corrected sample-in and sample-out spectra. The sum of the backgrounds is less than 0.5% of the open beam from 60 to 800 keV, the upper energy range of this measurement. A more detailed discussion of data reduction techniques is given in Ref. (LA76).

Finally, ratios were formed of the sample-in and sample-out spectra for both the 80-m and 200-m data and combined with the sample thicknesses to form spectra of cross section versus energy. The regions selected from the 80- and 200-m data for the final spectrum are listed in Table I. An interactive computer program which averages the data was then used to reduce the number of points, while preserving the resonant structure. This reduced the number of cross section values to 1,488. A tabulation of these averaged transmission and cross sections is given in the Appendix.

RESULTS

Results of our measurements compared with the present ENDF/B-IV evaluation for silicon (LA75) are shown in Figs. 1-4. The energy region from 5 eV to 20 keV is shown in Fig. 1. Due to absence of data, the evaluation from 5 eV to 5 keV is the sum of a constant thermal scattering cross section of 2.15b and a $1/v$ radiative capture cross section. From 5 to 10 keV the data of Brugger and Fluharty (BR56) were used, while the data of Fields and Walt (FI51) were used from 13.5 to 20 keV. The resonance near 5 keV has been observed in the $^{30}\text{Si} + n$ separated isotope measurement of Good and Harvey (G073). Good agreement with the evaluation is observed up to 10 keV.

Figure 2 shows a comparison of our data with the present evaluation from 20 to 100 keV. The evaluation in this region is based on the data of Fields and Walt (FI51). Three resonances are observed in this region. The resonance at 38.8 keV has also been observed in the separated isotope measurement of Good and Harvey, where it was assigned to $^{29}\text{Si} + n$. The

s-wave resonance at 55.7 keV has a minimum cross section of about 200 ± 80 mb, a peak cross section of 49 b, and is not present in the current evaluation. The narrow resonance at 67.7 keV is in $^{28}\text{Si} + n$.

The region from 100 to 450 keV is shown in Fig. 3, along with the evaluation. In this energy range the evaluation is based on the data of Whalen and Meadows (WH66). The evaluation is shifted about 8 keV toward higher energies from the present measurement, and we observe a minimum of about 170 ± 50 mb near 150 keV and a peak cross section of 14.3 b for the 180-keV s wave. The resonance at 354 keV has not been seen in previous transmission measurements.

Finally, Fig. 4 shows our data from 450 to 730 keV, together with the evaluation. From 450 to 500 keV the evaluation is based on data of Whalen and Meadows (WH66), and from 500 to 730 keV the data of Schrack, Schwartz and Heaton (SC71) were used. The region from 530 to 610 keV is quite complicated, and the higher peak cross sections which we observe are characteristic of our better energy resolution. Five resonances at 532, 565, 587, 590 and 602 keV are observed. The resonance at 590 keV is a narrow s-wave resonance with the characteristic interference minima; the remainder are most likely p- or d-wave resonances.

SUMMARY

We have measured the transmission of neutrons through silicon from 5 eV to 730 keV. The results have been compared with the present ENDF/B-IV evaluation for the silicon total cross section, and a number of discrepancies are observed. In particular, the evaluation does not account

for the large s-wave resonance at 55 keV, and peak cross sections for a number of other resonances are too small in the present evaluation.

The transmission and cross section values have been sent to the National Neutron Cross Section Center at Brookhaven National Laboratory.

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TABLE I. Summary of experimental information about the energy boundaries which were used to generate the final set of cross section values. Neutron energies are in keV unless otherwise noted.

<u>Neutron Energy</u>		<u>Flight Path (m)</u>	<u>Sample Thickness n(atoms/barn)</u>	<u>Run</u>
<u>E_{min}</u>	<u>E_{max}</u>			
5.12 eV	38.66	80	0.07462	8090
38.73	38.95	200	0.03762	3032
38.96	67.46	80	0.07462	8090
67.54	727.9	200	0.03762	3032

ORNL-DWG 76-11888

FIGURE 1

FIGURE 2

ORNL-DWG 76-11890

FIGURE 3

FIGURE 4

APPENDIX

This Appendix lists the 1,488 values of the averaged cross sections. The neutron energies are in keV, and the cross sections and errors are given in barns. The errors given are statistical only, and do not include an estimated $\pm 3\%$ systematic uncertainty.

ENERGY	X-SECTION	X-ERROR	TRANS	T-ERROR	ENERGY	X-SECTION	X-ERROR	TRANS	T-ERROR
0.51212E-02	0.22717E-01	0.62431E-01	0.84518E-00	0.40289E-02	0.55683E-02	0.20602E-01	0.56386E-01	0.85824E-00	0.36869E-02
0.60766E-02	0.20769E-01	0.51268E-01	0.85713E-00	0.33420E-02	0.66578E-02	0.20891E-01	0.46690E-01	0.85620E-00	0.30352E-02
0.71222E-02	0.20236E-01	0.80933E-01	0.86208E-00	0.53715E-02	0.73016E-02	0.21454E-01	0.84014E-01	0.85400E-00	0.55229E-02
0.74638E-02	0.19912E-01	0.81627E-01	0.86380E-00	0.54236E-02	0.76724E-02	0.19847E-01	0.79860E-01	0.86400E-00	0.53031E-02
0.78686E-02	0.20984E-01	0.77791E-01	0.85733E-00	0.51222E-02	0.80723E-02	0.21067E-01	0.76106E-01	0.85592E-00	0.49999E-02
0.82641E-02	0.21556E-01	0.74249E-01	0.85253E-00	0.48557E-02	0.85043E-02	0.21784E-01	0.72351E-01	0.85138E-00	0.47217E-02
0.87334E-02	0.19983E-01	0.70794E-01	0.86296E-00	0.46810E-02	0.85719E-02	0.19933E-01	0.68924E-01	0.86311E-00	0.45547E-02
0.92203E-02	0.21215E-01	0.67307E-01	0.85466E-00	0.44014E-02	0.94792E-02	0.20543E-01	0.65616E-01	0.85898E-00	0.43100E-02
0.97491E-02	0.21267E-01	0.64202E-01	0.85463E-00	0.41931E-02	0.10031E-01	0.20454E-01	0.62408E-01	0.85942E-00	0.40966E-02
0.10325E-01	0.21589E-01	0.61033E-01	0.85224E-00	0.39707E-02	0.10632E-01	0.21830E-01	0.59547E-01	0.85056E-00	0.38642E-02
0.10953E-01	0.21390E-01	0.58101E-01	0.85336E-00	0.37809E-02	0.11289E-01	0.20434E-01	0.56575E-01	0.85942E-00	0.37054E-02
0.11640E-01	0.21292E-01	0.55225E-01	0.85376E-00	0.35914E-02	0.12008E-01	0.20793E-01	0.53781E-01	0.85724E-00	0.35097E-02
0.12394E-01	0.20591E-01	0.52480E-01	0.85812E-00	0.34269E-02	0.12799E-01	0.20756E-01	0.51209E-01	0.85698E-00	0.33380E-02
0.13224E-01	0.20579E-01	0.49908E-01	0.85809E-00	0.32557E-02	0.13670E-01	0.20979E-01	0.48551E-01	0.85562E-00	0.31645E-02
0.14140E-01	0.20406E-01	0.47295E-01	0.85928E-00	0.30867E-02	0.14634E-01	0.21524E-01	0.46170E-01	0.85212E-00	0.29869E-02
0.15154E-01	0.20859E-01	0.45472E-01	0.85647E-00	0.29233E-02	0.15703E-01	0.21589E-01	0.43803E-01	0.85178E-00	0.28300E-02
0.16282E-01	0.20892E-01	0.42722E-01	0.85871E-00	0.27816E-02	0.16894E-01	0.21041E-01	0.41559E-01	0.85516E-00	0.26937E-02
0.17541E-01	0.21171E-01	0.40509E-01	0.85801E-00	0.26110E-02	0.18225E-01	0.20837E-01	0.39440E-01	0.85638E-00	0.25577E-02
0.18951E-01	0.20420E-01	0.38452E-01	0.85900E-00	0.25031E-02	0.19720E-01	0.21280E-01	0.37399E-01	0.85346E-00	0.24154E-02
0.20538E-01	0.21019E-01	0.36161E-01	0.85521E-00	0.23559E-02	0.21408E-01	0.21097E-01	0.35503E-01	0.85459E-00	0.22945E-02
0.22334E-01	0.20649E-01	0.34475E-01	0.85749E-00	0.22346E-02	0.23321E-01	0.20424E-01	0.33552E-01	0.85886E-00	0.21775E-02
0.24375E-01	0.20702E-01	0.32684E-01	0.85712E-00	0.21161E-02	0.25503E-01	0.20393E-01	0.31758E-01	0.85909E-00	0.20602E-02
0.26710E-01	0.20939E-01	0.30951E-01	0.85562E-00	0.19951E-02	0.28006E-01	0.20958E-01	0.30100E-01	0.85547E-00	0.19433E-02
0.29392E-01	0.21799E-01	0.29303E-01	0.85004E-00	0.18792E-02	0.30896E-01	0.20761E-01	0.28458E-01	0.85673E-00	0.18389E-02
0.32512E-01	0.21027E-01	0.27700E-01	0.85493E-00	0.17856E-02	0.34258E-01	0.21035E-01	0.26894E-01	0.85491E-00	0.17331E-02
0.36149E-01	0.21084E-01	0.26135E-01	0.85462E-00	0.16832E-02	0.38200E-01	0.20845E-01	0.25375E-01	0.85611E-00	0.16365E-02
0.40431E-01	0.20768E-01	0.24654E-01	0.85657E-00	0.15905E-02	0.42864E-01	0.20760E-01	0.23962E-01	0.85661E-00	0.15454E-02
0.45523E-01	0.21158E-01	0.23257E-01	0.85407E-00	0.14952E-02	0.48437E-01	0.21367E-01	0.22603E-01	0.85271E-00	0.14505E-02
0.51641E-01	0.20880E-01	0.21921E-01	0.85587E-00	0.14116E-02	0.55173E-01	0.20777E-01	0.21287E-01	0.85646E-00	0.13714E-02
0.59080E-01	0.20903E-01	0.20654E-01	0.85564E-00	0.13290E-02	0.63417E-01	0.20716E-01	0.20016E-01	0.85686E-00	0.12895E-02
0.68250E-01	0.21154E-01	0.19418E-01	0.85407E-00	0.12466E-02	0.72658E-01	0.21189E-01	0.18822E-01	0.85384E-00	0.12078E-02
0.75734E-01	0.20647E-01	0.18230E-01	0.85599E-00	0.11725E-02	0.83595E-01	0.21121E-01	0.17678E-01	0.85425E-00	0.11344E-02
0.92015E-01	0.20307E-01	0.16731E-01	0.85566E-00	0.10914E-02	0.90814E-01	0.20367E-01	0.16344E-01	0.85934E-00	0.10134E-02
0.96191E-01	0.20520E-01	0.15747E-01	0.85831E-00	0.10189E-02	0.98363E-01	0.20521E-01	0.15446E-01	0.85834E-00	0.09165E-02
0.10061E-01	0.21021E-01	0.13192E-01	0.85505E-00	0.10244E-02	0.10293E-01	0.20671E-01	0.14392E-01	0.85731E-00	0.08213E-02
0.10534E-01	0.21151E-01	0.12705E-01	0.85429E-00	0.1106E-02	0.10783E-01	0.21193E-01	0.13402E-01	0.85349E-00	0.07090E-02
0.11041E-01	0.21537E-01	0.12150E-01	0.85175E-00	0.12662E-02	0.11308E-01	0.20849E-01	0.13892E-01	0.85613E-00	0.06191E-02
0.11586E-01	0.21092E-01	0.11570E-01	0.85459E-00	0.12037E-02	0.11873E-01	0.21202E-01	0.13162E-01	0.85385E-00	0.05219E-02
0.12172E-01	0.21254E-01	0.11029E-01	0.85349E-00	0.11593E-02	0.12482E-01	0.20736E-01	0.10738E-01	0.85687E-00	0.04198E-02
0.12803E-01	0.21290E-01	0.10452E-01	0.85335E-00	0.10614E-02	0.13138E-01	0.20974E-01	0.10151E-01	0.85535E-00	0.03462E-02
0.13485E-01	0.20383E-01	0.09875E-01	0.85918E-00	0.10369E-02	0.13847E-01	0.21072E-01	0.09669E-01	0.85472E-00	0.029134E-02
0.14223E-01	0.20627E-01	0.09447E-01	0.85754E-00	0.10053E-02	0.14615E-01	0.20536E-01	0.09199E-01	0.85820E-00	0.02490E-02
0.15024E-01	0.20838E-01	0.09016E-01	0.85619E-00	0.09741E-02	0.15449E-01	0.21116E-01	0.08780E-01	0.85440E-00	0.02148E-02
0.15894E-01	0.20627E-01	0.08523E-01	0.85759E-00	0.09449E-02	0.16357E-01	0.21020E-01	0.08305E-01	0.85507E-00	0.018253E-02
0.16641E-01	0.21275E-01	0.08074E-01	0.85336E-00	0.09077E-02	0.17347E-01	0.21011E-01	0.07850E-01	0.85505E-00	0.01795E-02
0.17678E-01	0.21003E-01	0.07592E-01	0.85510E-00	0.08773E-02	0.18430E-01	0.20498E-01	0.07364E-01	0.85835E-00	0.017708E-02
0.19010E-01	0.20946E-01	0.07094E-01	0.85545E-00	0.08472E-02	0.19617E-01	0.20493E-01	0.06829E-01	0.85837E-00	0.017359E-02
0.20254E-01	0.20592E-01	0.06600E-01	0.85773E-00	0.08116E-02	0.20923E-01	0.21174E-01	0.06388E-01	0.85399E-00	0.01698E-02
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0.24821E-01	0.21434E-01	0.05233E-01	0.85234E-00	0.07201E-02	0.25780E-01	0.20953E-01	0.04958E-01	0.85538E-00	0.016088E-02
0.26691E-01	0.20802E-01	0.04731E-01	0.85637E-00	0.06837E-02	0.27706E-01	0.20831E-01	0.04516E-01	0.85617E-00	0.015808E-02
0.28780E-01	0.20655E-01	0.04259E-01	0.85724E-00	0.06477E-02	0.29518E-01	0.20763E-01	0.04086E-01	0.85659E-00	0.01553E-02
0.31125E-01	0.21160E-01	0.03903E-01	0.85410E-00	0.06137E-02	0.32406E-01	0.20998E-01	0.03865E-01	0.85510E-00	0.015365E-02
0.33769E-01	0.20967E-01	0.03597E-01	0.85531E-00	0.05849E-02	0.35219E-01	0.20829E-01	0.03384E-01	0.85618E-00	0.015071E-02
0.36364E-01	0.21207E-01	0.03294E-01	0.85374E-00	0.05473E-02	0.38413E-01	0.21296E-01	0.02697E-01	0.85319E-00	0.014574E-02
0.40176E-01	0.20732E-01	0.02849E-01	0.85678E-00	0.04474E-02	0.42063E-01	0.20748E-01	0.02199E-01	0.85665E-00	0.014310E-02
0.43684E-01	0.21320E-01	0.02412E-01	0.85315E-00	0.03937E-02	0.44744E-01	0.20941E-01	0.01935E-01	0.85554E-00	0.01390E-02
0.48534E-01	0.21102E-01	0.02047E-01	0.85450E-00	0.03321E-02	0.46966E-01	0.20966E-01	0.01654E-01	0.85537E-00	0.013733E-02
0.48139E-01	0.20585E-01	0.01840E-01	0.85786E-00	0.02689E-02	0.49358E-01	0.20635E-01	0.01356E-01	0.85748E-00	0.013580E-02
0.50623E-01	0.20534E-01	0.01605E-01	0.85816E-00	0.02491E-02	0.51937E-01	0.20722E-01	0.01171E-01	0.85695E-00	0.013282E-02
0.53303E-01	0.20980E-01	0.01281E-01	0.85529E-00	0.02400E-02	0.54724E-01	0.20401E-01	0.00964E-01	0.85894E-00	0.012915E-02
0.56203E-01	0.20919E-01	0.01040E-01	0.85567E-00	0.02306E-02	0.57742E-01	0.20667E-01	0.00747E-01	0.85731E-00	0.012606E-02
0.59345E-01	0.20575E-01	0.00816E-01	0.85791E-00	0.02188E-02	0.61016E-01	0.20621E-01	0.00575E-01	0.85758E-00	0.012475E-02
0.62758E-01	0.21072E-01	0.00880E-01	0.85466E-00	0.02153E-02	0.64657E-01	0.20355E-01	0.00438E-01	0.85929E-00	0.012359E-02
0.66475E-01	0.21124E-01	0.00848E-01	0.85438E-00	0.02134E-02	0.68458E-01	0.20545E-01	0.00325E-01	0.85803E-00	0.012329E-02
0.70532E-01	0.20787E-01	0.00818E-01	0.85650E-00	0.02189E-02	0.72701E-01	0.21251E-01	0.00205E-01	0.85356E-00	0.012026E-02
0.74972E-01	0.20351E-01	0.00785E-01	0.85927E-00	0.02180E-02	0.77351E-01	0.20976E-01	0.00176E-01	0.85532E-00	0.011785E-02
0.79845E-01	0.20817E-01	0.00754E-01	0.85631E-00	0.02177E-02	0.82461E-01	0.20574E-01	0.00134E-01	0.85787E-00	0.011686E-02
0.85208E-01	0.20982E-01	0.00720E-01	0.85523E-00	0.02176E-02	0.88095E-01	0.20695E-01	0.00103E-01	0.85710E-00	0.011573E-02
0.91131E-01	0.20733E-01	0.00683E-01	0.85657E-00	0.02171E-02	0.94363E-01	0.20902E-01	0.00069E-01	0.85573E-00	0.011291E-02
0.97694E-01	0.20101E-01	0.00652E-01	0.85505E-00	0.02170E-02	0.10124E-01	0.20863E-01	0.00036E-01	0.85599E-00	0.011010E-02
0.10499E-01	0.20813E-01	0.00626E-01	0.85635E-00	0.02169E-02	0.10895E-01	0.20406E-01	0.00016E-01	0.85690E-00	0.010934E-02
0.11314E-01	0.20537E-01	0.00580E-01	0.85806E-00	0.02167E-02	0.11757E-01	0.20659E-01	0.00015E-01	0.85732E-00	0.010673E-02
0.12227									

ENERGY	X-SECTION	X-ERROR	TRANS	T-ERROR	ENERGY	X-SECTION	X-ERROR	TRANS	T-ERROR
0.52271E-01	0.20697E-01	0.54670E-01	0.85730E-01	0.35511E-02	0.52875E-01	0.21645E-01	0.54492E-01	0.85117E-01	0.35143E-02
0.53490E-01	0.20698E-01	0.54579E-01	0.85731E-01	0.35455E-02	0.54115E-01	0.20660E-01	0.54616E-01	0.85761E-01	0.35469E-02
0.54752E-01	0.20699E-01	0.54406E-01	0.85740E-01	0.35278E-02	0.55400E-01	0.20899E-01	0.54166E-01	0.85608E-01	0.35129E-02
0.55059E-01	0.20699E-01	0.54066E-01	0.85773E-01	0.35132E-02	0.56730E-01	0.20354E-01	0.53920E-01	0.85590E-01	0.35111E-02
0.55413E-01	0.20946E-01	0.53712E-01	0.85560E-01	0.34814E-02	0.58109E-01	0.21040E-01	0.54019E-01	0.85519E-01	0.34954E-02
0.58817E-01	0.21663E-01	0.59401E-01	0.85125E-01	0.38360E-02	0.59539E-01	0.19995E-01	0.54518E-01	0.86199E-01	0.35608E-02
0.60274E-01	0.20987E-01	0.53608E-01	0.85549E-01	0.34738E-02	0.61022E-01	0.20844E-01	0.53611E-01	0.85650E-01	0.34780E-02
0.61785E-01	0.20682E-01	0.53522E-01	0.85727E-01	0.34754E-02	0.62561E-01	0.21034E-01	0.53356E-01	0.85506E-01	0.34657E-02
0.63353E-01	0.19981E-01	0.53326E-01	0.86184E-01	0.34811E-02	0.64160E-01	0.20522E-01	0.53291E-01	0.85844E-01	0.34684E-02
0.64982E-01	0.19756E-01	0.53228E-01	0.86332E-01	0.34804E-02	0.65820E-01	0.19935E-01	0.52954E-01	0.86221E-01	0.34579E-02
0.66675E-01	0.20123E-01	0.53067E-01	0.86079E-01	0.34597E-02	0.67546E-01	0.20984E-01	0.52979E-01	0.85550E-01	0.34327E-02
0.68434E-01	0.20343E-01	0.52794E-01	0.85953E-01	0.34366E-02	0.69340E-01	0.21394E-01	0.52863E-01	0.85294E-01	0.34147E-02
0.70265E-01	0.20785E-01	0.52631E-01	0.85667E-01	0.34145E-02	0.71207E-01	0.19883E-01	0.52422E-01	0.86260E-01	0.34241E-02
0.72169E-01	0.19861E-01	0.52413E-01	0.86269E-01	0.34239E-02	0.73151E-01	0.20208E-01	0.52109E-01	0.86029E-01	0.33943E-02
0.74152E-01	0.20604E-01	0.52124E-01	0.85751E-01	0.33844E-02	0.75175E-01	0.20904E-01	0.52024E-01	0.85602E-01	0.33719E-02
0.76219E-01	0.19870E-01	0.52079E-01	0.86245E-01	0.34011E-02	0.77284E-01	0.20359E-01	0.51900E-01	0.85932E-01	0.33767E-02
0.78372E-01	0.20761E-01	0.51777E-01	0.85688E-01	0.33590E-02	0.79483E-01	0.20927E-01	0.51986E-01	0.85580E-01	0.33686E-02
0.80618E-01	0.20184E-01	0.51683E-01	0.86053E-01	0.33672E-02	0.81778E-01	0.19763E-01	0.51467E-01	0.86318E-01	0.33632E-02
0.82963E-01	0.21060E-01	0.52034E-01	0.85495E-01	0.33682E-02	0.84173E-01	0.20393E-01	0.51556E-01	0.85923E-01	0.33803E-02
0.85410E-01	0.20584E-01	0.51299E-01	0.85815E-01	0.33322E-02	0.86675E-01	0.19962E-01	0.51215E-01	0.86196E-01	0.33419E-02
0.87968E-01	0.19489E-01	0.51213E-01	0.86498E-01	0.33536E-02	0.89219E-01	0.20756E-01	0.51090E-01	0.85687E-01	0.33162E-02
0.90643E-01	0.19803E-01	0.50910E-01	0.86268E-01	0.33243E-02	0.92040E-01	0.20578E-01	0.50979E-01	0.85537E-01	0.33005E-02
0.93441E-01	0.19206E-01	0.50672E-01	0.86697E-01	0.33265E-02	0.94889E-01	0.20340E-01	0.50291E-01	0.85959E-01	0.32715E-02
0.96371E-01	0.19704E-01	0.50173E-01	0.86311E-01	0.32792E-02	0.97888E-01	0.20137E-01	0.50410E-01	0.86083E-01	0.32843E-02
0.99441E-01	0.19431E-01	0.50334E-01	0.86535E-01	0.32964E-02	0.10103E-02	0.20177E-01	0.50396E-01	0.86070E-01	0.32825E-02
0.10266E-02	0.19724E-01	0.50088E-01	0.86359E-01	0.32732E-02	0.10433E-02	0.20439E-01	0.50076E-01	0.85903E-01	0.32512E-02
0.10604E-02	0.19552E-01	0.49868E-01	0.86202E-01	0.32521E-02	0.10779E-02	0.20310E-01	0.49827E-01	0.85980E-01	0.32418E-02
0.10959E-02	0.19510E-01	0.49716E-01	0.86483E-01	0.32534E-02	0.11143E-02	0.19097E-01	0.49485E-01	0.86762E-01	0.32463E-02
0.11311E-02	0.20209E-01	0.49299E-01	0.85970E-01	0.32064E-02	0.11525E-02	0.20039E-01	0.49261E-01	0.86143E-01	0.32105E-02
0.11724E-02	0.20495E-01	0.49031E-01	0.85861E-01	0.31846E-02	0.11927E-02	0.19778E-01	0.48956E-01	0.86312E-01	0.31969E-02
0.12137E-02	0.18903E-01	0.48798E-01	0.86867E-01	0.32068E-02	0.12351E-02	0.20240E-01	0.48808E-01	0.86021E-01	0.31756E-02
0.12572E-02	0.20276E-01	0.48408E-01	0.85992E-01	0.31486E-02	0.12798E-02	0.18679E-01	0.48656E-01	0.87019E-01	0.32028E-02
0.13031E-02	0.20366E-01	0.48659E-01	0.85947E-01	0.31636E-02	0.13270E-02	0.19059E-01	0.48374E-01	0.86771E-01	0.31749E-02
0.13515E-02	0.19555E-01	0.48273E-01	0.86452E-01	0.31566E-02	0.13768E-02	0.19163E-01	0.47971E-01	0.86720E-01	0.31462E-02
0.14015E-02	0.20182E-01	0.56751E-01	0.86060E-01	0.37041E-02	0.14170E-02	0.20547E-01	0.47973E-01	0.86854E-01	0.34431E-02
0.14304E-02	0.20131E-01	0.67343E-01	0.86132E-01	0.44105E-02	0.14441E-02	0.19319E-01	0.67019E-01	0.86668E-01	0.34158E-02
0.14579E-02	0.20211E-01	0.67114E-01	0.86056E-01	0.43911E-02	0.14720E-02	0.18769E-01	0.67127E-01	0.86996E-01	0.34445E-02
0.14862E-02	0.19803E-01	0.66951E-01	0.86348E-01	0.43953E-02	0.15007E-02	0.19201E-01	0.66714E-01	0.86705E-01	0.34977E-02
0.15154E-02	0.19812E-01	0.66746E-01	0.86311E-02	0.43800E-02	0.15302E-02	0.20322E-01	0.66325E-01	0.85990E-01	0.34359E-02
0.15454E-02	0.19427E-01	0.66459E-01	0.86562E-01	0.43758E-02	0.15607E-02	0.20082E-01	0.66205E-01	0.86155E-01	0.34364E-02
0.15763E-02	0.19306E-01	0.66229E-01	0.86658E-01	0.43623E-02	0.15921E-02	0.20020E-01	0.65840E-01	0.86191E-01	0.34307E-02
0.16081E-02	0.19267E-01	0.65932E-01	0.86385E-01	0.43318E-02	0.16244E-02	0.18271E-01	0.65867E-01	0.87101E-01	0.34370E-02
0.16409E-02	0.18927E-01	0.65610E-01	0.86890E-01	0.43631E-02	0.16577E-02	0.19412E-01	0.66112E-01	0.86576E-01	0.34513E-02
0.16747E-02	0.19593E-01	0.71040E-01	0.86488E-01	0.46768E-02	0.16920E-02	0.19137E-01	0.65798E-01	0.86744E-01	0.34382E-02
0.17096E-02	0.19027E-01	0.65477E-01	0.86807E-01	0.43200E-02	0.17275E-02	0.18830E-01	0.65222E-01	0.86965E-01	0.34310E-02
0.17456E-02	0.20704E-01	0.65213E-01	0.85752E-01	0.42495E-02	0.17640E-02	0.18871E-01	0.65208E-01	0.86919E-01	0.34307E-02
0.17827E-02	0.19886E-01	0.65205E-01	0.86254E-01	0.42742E-02	0.18017E-02	0.19747E-01	0.64718E-01	0.86134E-01	0.34240E-02
0.18210E-02	0.19467E-01	0.64496E-01	0.86517E-01	0.42398E-02	0.18407E-02	0.19586E-01	0.64738E-01	0.86483E-01	0.34259E-02
0.18606E-02	0.19832E-01	0.64596E-01	0.86304E-01	0.42359E-02	0.18809E-02	0.20133E-01	0.64603E-01	0.86609E-01	0.34229E-02
0.19015E-02	0.17980E-01	0.64425E-01	0.87488E-01	0.42825E-02	0.15225E-02	0.19933E-01	0.64476E-01	0.86235E-01	0.34224E-02
0.19438E-02	0.18713E-01	0.64211E-01	0.87031E-01	0.42457E-02	0.19564E-02	0.19278E-01	0.64460E-01	0.86670E-01	0.34244E-02
0.19874E-02	0.20227E-01	0.64064E-01	0.86050E-01	0.41878E-02	0.20098E-02	0.18885E-01	0.64103E-01	0.86925E-01	0.34238E-02
0.20326E-02	0.18680E-01	0.63631E-01	0.87058E-01	0.42077E-02	0.20557E-02	0.18834E-01	0.63654E-01	0.86954E-01	0.34201E-02
0.20793E-02	0.19397E-01	0.63543E-01	0.86587E-01	0.41794E-02	0.21033E-02	0.20176E-01	0.63670E-01	0.86091E-01	0.34163E-02
0.21276E-02	0.18096E-01	0.63308E-01	0.87423E-01	0.42036E-02	0.21524E-02	0.18372E-01	0.62565E-01	0.87258E-01	0.34147E-02
0.21777E-02	0.18707E-01	0.62488E-01	0.87036E-01	0.41295E-02	0.22034E-02	0.19137E-01	0.62671E-01	0.86755E-01	0.341250E-02
0.22295E-02	0.19345E-01	0.62883E-01	0.86605E-01	0.41358E-02	0.22561E-02	0.18690E-01	0.62422E-01	0.87022E-01	0.341251E-02
0.22832E-02	0.19578E-01	0.62708E-01	0.86467E-01	0.41179E-02	0.23108E-02	0.19272E-01	0.62514E-01	0.86663E-01	0.341138E-02
0.23389E-02	0.17772E-01	0.62348E-01	0.87466E-01	0.41490E-02	0.23675E-02	0.18738E-01	0.62131E-01	0.87016E-01	0.341050E-02
0.23966E-02	0.17608E-01	0.62203E-01	0.87756E-01	0.41444E-02	0.24263E-02	0.18423E-01	0.62383E-01	0.87199E-01	0.34131E-02
0.24565E-02	0.18509E-01	0.62008E-01	0.87562E-01	0.41230E-02	0.24873E-02	0.17704E-01	0.61666E-01	0.87668E-01	0.341046E-02
0.25187E-02	0.18703E-01	0.61505E-01	0.87021E-01	0.41306E-02	0.25507E-02	0.17905E-01	0.64883E-01	0.87564E-01	0.341651E-02
0.25833E-02	0.18477E-01	0.61548E-01	0.87181E-01	0.41733E-02	0.26165E-02	0.18509E-01	0.61427E-01	0.87160E-01	0.340644E-02
0.26504E-02	0.18106E-01	0.61376E-01	0.87423E-01	0.40730E-02	0.26849E-02	0.18640E-01	0.61523E-01	0.87067E-01	0.34063E-02
0.27201E-02	0.18687E-01	0.61178E-01	0.87062E-01	0.40430E-02	0.27560E-02	0.17087E-01	0.60692E-01	0.88086E-01	0.340579E-02
0.27926E-02	0.17565E-01	0.60620E-01	0.87773E-01	0.40383E-02	0.28299E-02	0.16710E-01	0.60017E-01	0.88323E-01	0.34022E-02
0.28680E-02	0.18435E-01	0.60340E-01	0.87195E-01	0.39933E-02	0.29069E-02	0.17011E-01	0.60308E-01	0.88123E-01	0.34033E-02
0.29466E-02	0.16981E-01	0.61089E-01	0.88152E-01	0.40879E-02	0.29871E-02	0.18318E-01	0.60217E-01	0.87286E-01	0.33984E-02
0.30284E-02	0.16404E-01	0.60914E-01	0.88570E-01	0.46712E-02	0.30706E-02	0.19082E-01	0.60179E-01	0.86783E-01	0.339631E-02
0.31137E-02	0.16473E-01	0.59595E-01	0.88481E-01	0.40009E-02	0.31577E-02	0.17671E-01	0.59359E-01	0.87707E-01	0.339499E-02
0.32026E-02	0.17655E-01	0.59441E-01	0.87709E-01	0.39556E-02	0.32485E-02	0.18222E-01	0.59710E-01	0.87347E-01	0.339572E-02
0.32954E-02	0.17764E-01	0.59565E-01	0.87634E-01	0.39877E-02	0.33344E-02	0.17446E-01	0.60576E-01	0.87838E-01	0.340384E-02
0.33923E-02	0.17544E-01	0.61800E-01	0.87784E-01	0.41189E-02	0.34424E-02	0.17101E-01	0.63066E-01	0.88069E-01	0.342182E-02
0.34936E-02	0.15558E-01	0.63766E-01	0.89099E-01	0.43159E-02	0.35459E-02	0.17444E-01	0.63518E-01	0.87873E-01	0.342395E-02
0.35994E-02	0.17								

ENERGY	X-SECTION	X-ERROR	TRANS	T-ERROR	ENERGY	X-SECTION	X-ERROR	TRANS	T-ERROR						
0.498262	02	0.91347E	00	0.92749E-01	0.93464E	00	0.65694E-C2	0.50143E	02	0.10233E	01	0.92938E-01	0.92672E	00	0.65281E-02
0.50462E	02	0.86419E	00	0.92721E-01	0.93798E	00	0.65914E-02	0.50784E	02	0.87704E	00	0.92556E-01	0.93692E	00	0.65719E-02
0.51110E	02	0.94126E	00	0.91959E-01	0.93284E	00	0.65000E-02	0.51438E	02	0.62134E	00	0.91765E-01	0.93521E	00	0.66421E-02
0.51770E	02	0.69133E	00	0.91535E-01	0.95028E	00	0.65912E-C2	0.52105E	02	0.57706E	00	0.91766E-01	0.93548E	00	0.67155E-02
0.52443E	02	0.63357E	00	0.91344E-01	0.95441E	00	0.66056E-02	0.52785E	02	0.60545E	00	0.90964E-01	0.95626E	00	0.65908E-02
0.53043E	02	0.10055E	00	0.12848E	00	0.98974E	00	0.96351E-C2	0.53216E	02	0.34841E	00	0.12808E	00	0.97445E-01
0.53391E	02	0.12679E	00	0.12864E	00	0.97625E	00	0.95158E-C2	0.53566E	02	0.22792E	00	0.12823E	00	0.98354E-01
0.53741E	02	0.17368E	00	0.12916E	00	0.98737E	00	0.96627E-02	0.53918E	02	0.41328E	00	0.12913E	00	0.97031E-01
0.54096E	02	0.19451E	00	0.12804E	00	0.98591E	00	0.95637E-02	0.54278E	02	0.25246E	00	0.12820E	00	0.98160E-01
0.54391E	02	0.47599E	00	0.23485E	00	0.96565E	00	0.17186E-01	0.54445E	02	0.10227E	01	0.23432E	00	0.92742E-01
0.54499E	02	0.81630E	00	0.23714E	00	0.96118E	00	0.16913E-01	0.54553E	02	0.86463E	00	0.23500E	00	0.93753E-01
0.54607E	02	0.54554E	00	0.23501E	00	0.96071E	00	0.17103E-01	0.54661E	02	0.10009E	01	0.23377E	00	0.92813E-01
0.54715E	02	0.10570E	01	0.23514E	00	0.92423E	00	0.16467E-01	0.54770E	02	0.16203E	01	0.23668E	00	0.88640E-01
0.54824E	02	0.16030E	01	0.23608E	00	0.88744E	00	0.15879E-C1	0.54879E	02	0.19579E	01	0.23796E	00	0.86451E-01
0.54933E	02	0.24518E	01	0.23608E	00	0.83308E	00	0.15031E-01	0.54970E	02	0.37948E	01	0.41820E	00	0.75337E-01
0.54988E	02	0.36904E	01	0.41961E	00	0.75926E	00	0.24152E-01	0.55006E	02	0.34564E	01	0.42057E	00	0.77264E-01
0.55024E	02	0.40746E	01	0.42884E	00	0.73780E	00	0.23945E-C1	0.55043E	02	0.39465E	01	0.42472E	00	0.74489E-01
0.55061E	02	0.37404E	01	0.42748E	00	0.75644E	00	0.24520E-01	0.55079E	02	0.49740E	01	0.42416E	00	0.68991E-01
0.55098E	02	0.45399E	01	0.42906E	00	0.71263E	00	0.23187E-C1	0.55116E	02	0.52807E	01	0.42507E	00	0.67430E-01
0.55113E	02	0.59642E	01	0.43321E	00	0.64077E	00	0.21054E-C1	0.55153E	02	0.60424E	01	0.42647E	00	0.63708E-01
0.55174E	02	0.63349E	01	0.43659E	00	0.62328E	00	0.20661E-01	0.55189E	02	0.71572E	01	0.44172E	00	0.58619E-01
0.55208E	02	0.76588E	01	0.44510E	00	0.56465E	00	0.19071E-C1	0.55226E	02	0.73299E	01	0.45077E	00	0.57868E-01
0.55244E	02	0.10126E	02	0.47513E	00	0.46970E	00	0.16953E-01	0.55263E	02	0.10192E	02	0.47164E	00	0.56738E-01
0.55281E	02	0.10477E	02	0.47857E	00	0.45755E	00	0.16636E-01	0.55299E	02	0.11448E	02	0.48232E	00	0.42571E-01
0.55318E	02	0.12155E	02	0.48851E	00	0.40370E	00	0.14989E-C1	0.55336E	02	0.13428E	02	0.51441E	00	0.36711E-01
0.55355E	02	0.14606E	02	0.51742E	00	0.33622E	00	0.13237E-01	0.55373E	02	0.15161E	02	0.53702E	00	0.32256E-01
0.55392E	02	0.17194E	02	0.55884E	00	0.27717E	00	0.11844E-01	0.55410E	02	0.18028E	02	0.56795E	00	0.26044E-01
0.55428E	02	0.20157E	02	0.59781E	00	0.22218E	00	0.10137E-01	0.55447E	02	0.21131E	02	0.61845E	00	0.20661E-01
0.55465E	02	0.21216E	02	0.62896E	00	0.19182E	00	0.92183E-02	0.55484E	02	0.25700E	02	0.71028E	00	0.14691E-01
0.55502E	02	0.26302E	02	0.72138E	00	0.14046E	00	0.77686E-02	0.55521E	02	0.28311E	02	0.76353E	00	0.12091E-01
0.55539E	02	0.30466E	02	0.83035E	00	0.10294E	00	0.65781E-02	0.55558E	02	0.32681E	02	0.89040E	00	0.87255E-01
0.55576E	02	0.34586E	02	0.93346E	00	0.75697E-01	0.54611E-C2	0.55595E	02	0.35514E	02	0.96830E	00	0.70630E-01	
0.55614E	02	0.38382E	02	0.10615E	01	0.57021E-01	0.47007E-C2	0.55632E	02	0.43082E	02	0.12548E	01	0.40153E-01	
0.55651E	02	0.44672E	02	0.13156E	01	0.35659E-01	0.36785E-02	0.55669E	02	0.44083E	02	0.12972E	01	0.37263E-01	
0.55688E	02	0.45506E	02	0.13581E	01	0.33508E-01	0.35742E-02	0.55706E	02	0.44234E	02	0.12917E	01	0.36843E-01	
0.55725E	02	0.49182E	02	0.15238E	01	0.25469E-01	0.30673E-02	0.55744E	02	0.46731E	02	0.14140E	01	0.30580E-01	
0.55762E	02	0.43907E	02	0.12938E	01	0.37755E-01	0.38270E-02	0.55781E	02	0.44712E	02	0.13129E	01	0.35555E-01	
0.55800E	02	0.47638E	02	0.16504E	01	0.28579E-01	0.32669E-02	0.55818E	02	0.44082E	02	0.12952E	01	0.37265E-01	
0.55837E	02	0.41749E	02	0.11920E	01	0.44350E-01	0.42612E-C2	0.55856E	02	0.40320E	02	0.11435E	01	0.49343E-01	
0.55874E	02	0.40561E	02	0.11568E	01	0.48463E-01	0.43656E-C2	0.55893E	02	0.37552E	02	0.10465E	01	0.60664E-01	
0.55912E	02	0.36666E	02	0.98819E	00	0.64813E-01	0.49603E-C2	0.55930E	02	0.36667E	02	0.10083E	01	0.64807E-01	
0.55949E	02	0.33625E	02	0.91833E	00	0.81324E-01	0.57688E-C2	0.55967E	02	0.32251E	02	0.90853E	00	0.83623E-01	
0.55987E	02	0.31850E	02	0.87031E	00	0.92838E-01	0.62258E-02	0.56005E	02	0.30907E	02	0.82362E	00	0.99613E-01	
0.56024E	02	0.28995E	02	0.78784E	00	0.11489E	00	0.69573E-02	0.56043E	02	0.29146E	02	0.78490E	00	0.11360E-01
0.56062E	02	0.28129E	02	0.76827E	00	0.12256E	00	0.72321E-02	0.56080E	02	0.26929E	02	0.73899E	00	0.13408E-01
0.56099E	02	0.26257E	02	0.71210E	00	0.14093E	00	0.76917E-C2	0.56118E	02	0.23540E	02	0.66848E	00	0.17261E-01
0.56137E	02	0.24316E	02	0.68579E	00	0.16290E	00	0.85540E-02	0.56156E	02	0.22927E	02	0.65672E	00	0.18070E-01
0.56175E	02	0.21773E	02	0.63069E	00	0.19694E	00	0.94908E-C2	0.56193E	02	0.21391E	02	0.62184E	00	0.20264E-01
0.56212E	02	0.20819E	02	0.61230E	00	0.21148E	00	0.98876E-C2	0.56231E	02	0.20201E	02	0.60243E	00	0.22146E-01
0.56250E	02	0.18820E	02	0.57783E	00	0.24550E	00	0.10818E-01	0.56269E	02	0.18689E	02	0.57450E	00	0.24791E-01
0.56288E	02	0.18374E	02	0.56959E	00	0.25380E	00	0.11021E-01	0.56307E	02	0.18490E	02	0.56965E	00	0.25161E-01
0.56326E	02	0.18367E	02	0.56468E	00	0.25393E	00	0.10929E-01	0.56344E	02	0.16449E	02	0.54622E	00	0.29302E-01
0.56363E	02	0.15920E	02	0.53139E	00	0.30480E	00	0.12330E-01	0.56382E	02	0.15474E	02	0.53710E	00	0.31514E-01
0.56401E	02	0.15145E	02	0.52428E	00	0.32296E	00	0.12887E-01	0.56420E	02	0.14121E	02	0.50542E	00	0.34862E-01
0.56439E	02	0.13693E	02	0.50360E	00	0.35991E	00	0.13784E-01	0.56458E	02	0.13852E	02	0.50771E	00	0.35567E-01
0.56477E	02	0.13181E	02	0.50456E	00	0.37394E	00	0.14349E-01	0.56496E	02	0.13641E	02	0.50528E	00	0.36131E-01
0.56515E	02	0.13566E	02	0.50859E	00	0.36334E	00	0.14056E-01	0.56534E	02	0.12287E	02	0.48458E	00	0.39974E-01
0.56553E	02	0.11285E	02	0.48271E	00	0.43078E	00	0.15801E-01	0.56572E	02	0.12111E	02	0.49239E	00	0.40503E-01
0.56591E	02	0.11742E	02	0.48416E	00	0.41633E	00	0.15318E-01	0.56610E	02	0.11767E	02	0.49232E	00	0.41556E-01
0.56629E	02	0.11242E	02	0.48127E	00	0.43119E	00	0.15740E-01	0.56648E	02	0.11767E	02	0.49232E	00	0.41556E-01
0.56667E	02	0.10457E	02	0.46931E	00	0.43855E	00	0.15632E-01	0.56687E	02	0.93634E	00	0.47047E	00	0.48728E-01
0.56705E	02	0.93998E	01	0.46464E	00	0.49585E	00	0.17495E-01	0.56725E	02	0.93520E	01	0.45538E	00	0.49762E-01
0.56743E	02	0.99770E	01	0.26925E	00	0.47501E	00	0.97121E-02	0.56821E	02	0.86965E	01	0.26178E	00	0.52319E-01
0.56781E	02	0.87504E	01	0.26029E	00	0.52075E	00	0.10285E-01	0.56936E	02	0.89787E	01	0.26042E	00	0.51169E-01
0.56819E	02	0.82595E	01	0.25688E	00	0.54000E	00	0.10525E-01	0.57051E	02	0.97946E	01	0.25692E	00	0.55153E-01
0.57109E	02	0.72040E	01	0.25265E	00	0.58431E	00	0.11198E-01	0.57167E	02	0.70129E	01	0.25144E	00	0.59257E-01
0.57225E	02	0.67185E	01	0.25260E	00	0.60584E	00	0.11608E-01	0.57283E	02	0.68620E	01	0.25170E	00	0.59962E-01
0.57342E	02	0.66231E	01	0.25189E	00	0.61048E	00	0.11661E-01	0.57400E	02	0.61861E	01	0.24860E	00	0.63028E-01
0.57458E	02	0.56005E	01	0.24793E	00	0.65919E	00	0.12392E-01	0.57517E	02	0.53507E	01	0.24687E	00	0.67123E-01
0.57575E	02	0.56789E	01												

ENERGY	X-SECTION	X-ERROR	TRANS	T-ERROR	ENERGY	X-SECTION	X-ERROR	TRANS	T-ERROR
0.74389E	02	0.20286E	01	0.15791E	00	0.92694E	00	0.55081E-02	0.74615E
0.74843E	02	0.18763E	01	0.15114E	00	0.93209E	00	0.52989E-02	0.75071E
0.75301E	02	0.17817E	01	0.15114E	00	0.93542E	00	0.53172E-02	0.75531E
0.75763E	02	0.16067E	01	0.14044E	00	0.94152E	00	0.49728E-02	0.75996E
0.76230E	02	0.20000E	01	0.14886E	00	0.92781E	00	0.51968E-02	0.76465E
0.76701E	02	0.18949E	01	0.15551E	00	0.93184E	00	0.54499E-02	0.76938E
0.77176E	02	0.17435E	01	0.14810E	00	0.93667E	00	0.52181E-02	0.77415E
0.77656E	02	0.15460E	01	0.14531E	00	0.94363E	00	0.51600E-02	0.77897E
0.78140E	02	0.17861E	01	0.14657E	00	0.93529E	00	0.51684E-02	0.78384E
0.78629E	02	0.16080E	01	0.14328E	00	0.94156E	00	0.50746E-02	0.78875E
0.79122E	02	0.17926E	01	0.14726E	00	0.93496E	00	0.51796E-02	0.79371E
0.79620E	02	0.19725E	01	0.15488E	00	0.93039E	00	0.54148E-02	0.79871E
0.80123E	02	0.19711E	01	0.14532E	00	0.92881E	00	0.50777E-02	0.80376E
0.80631E	02	0.17000E	01	0.14048E	00	0.93821E	00	0.49585E-02	0.80886E
0.81143E	02	0.15620E	01	0.14270E	00	0.94335E	00	0.50649E-02	0.81401E
0.81660E	02	0.13180E	01	0.13343E	00	0.95174E	00	0.49529E-02	0.81921E
0.82183E	02	0.16160E	01	0.14186E	00	0.94149E	00	0.50275E-02	0.82446E
0.82710E	02	0.17089E	01	0.14055E	00	0.93810E	00	0.49581E-02	0.82976E
0.83242E	02	0.15578E	01	0.13925E	00	0.94341E	00	0.49417E-02	0.83510E
0.83780E	02	0.16113E	01	0.13615E	00	0.94154E	00	0.48212E-02	0.84051E
0.84323E	02	0.15902E	01	0.13417E	00	0.94205E	00	0.47551E-02	0.84596E
0.84871E	02	0.14529E	01	0.13773E	00	0.94710E	00	0.49066E-02	0.85147E
0.85424E	02	0.17732E	01	0.13418E	00	0.93564E	00	0.47251E-02	0.85703E
0.85983E	02	0.13844E	01	0.13449E	00	0.95105E	00	0.48131E-02	0.86264E
0.86547E	02	0.17227E	01	0.13671E	00	0.93755E	00	0.48222E-02	0.86831E
0.87117E	02	0.15510E	01	0.13775E	00	0.94358E	00	0.48914E-02	0.87404E
0.87693E	02	0.15440E	01	0.13356E	00	0.94374E	00	0.47421E-02	0.87983E
0.88274E	02	0.17237E	01	0.13704E	00	0.93740E	00	0.48332E-02	0.88567E
0.88861E	02	0.16077E	01	0.13266E	00	0.94152E	00	0.46991E-02	0.89157E
0.89454E	02	0.14711E	01	0.12808E	00	0.94627E	00	0.45600E-02	0.89753E
0.90053E	02	0.17080E	01	0.13141E	00	0.93794E	00	0.46365E-02	0.90355E
0.90658E	02	0.13561E	01	0.13179E	00	0.95049E	00	0.47111E-02	0.90963E
0.91269E	02	0.13962E	01	0.13432E	00	0.94903E	00	0.47956E-02	0.91577E
0.91886E	02	0.14799E	01	0.12686E	00	0.94603E	00	0.45160E-02	0.92197E
0.92510E	02	0.15968E	01	0.12545E	00	0.94183E	00	0.44443E-02	0.92824E
0.93140E	02	0.13614E	01	0.12162E	00	0.95039E	00	0.43499E-02	0.93457E
0.93776E	02	0.14740E	01	0.12557E	00	0.94640E	00	0.44495E-02	0.94097E
0.94419E	02	0.14391E	01	0.12512E	00	0.94753E	00	0.44638E-02	0.94738E
0.95069E	02	0.13868E	01	0.12946E	00	0.95037E	00	0.46289E-02	0.95396E
0.95725E	02	0.12240E	01	0.12308E	00	0.95523E	00	0.44233E-02	0.96056E
0.96388E	02	0.11129E	01	0.12489E	00	0.95929E	00	0.45067E-02	0.96722E
0.97058E	02	0.12661E	01	0.12679E	00	0.95365E	00	0.45490E-02	0.97396E
0.97735E	02	0.13249E	01	0.12589E	00	0.95152E	00	0.45065E-02	0.98076E
0.98419E	02	0.11434E	01	0.12367E	00	0.95811E	00	0.44578E-02	0.98764E
0.99110E	02	0.15548E	01	0.13033E	00	0.94370E	00	0.46247E-02	0.99459E
0.99809E	02	0.17179E	01	0.12634E	00	0.95715E	00	0.45501E-02	0.10016E
0.10052E	03	0.12522E	01	0.12381E	00	0.95416E	00	0.44440E-02	0.10087E
0.10123E	03	0.13868E	01	0.12359E	00	0.94925E	00	0.44413E-02	0.10159E
0.10195E	03	0.12702E	01	0.12478E	00	0.95356E	00	0.44742E-02	0.10231E
0.10268E	03	0.11384E	01	0.12637E	00	0.95838E	00	0.45550E-02	0.10305E
0.10342E	03	0.10245E	01	0.12557E	00	0.96247E	00	0.45477E-02	0.10379E
0.10416E	03	0.10736E	01	0.11858E	00	0.96055E	00	0.42852E-02	0.10454E
0.10491E	03	0.11693E	01	0.12170E	00	0.95711E	00	0.43824E-02	0.10529E
0.10567E	03	0.11828E	01	0.12399E	00	0.95662E	00	0.44610E-02	0.10606E
0.10644E	03	0.10642E	01	0.11604E	00	0.96100E	00	0.41947E-02	0.10683E
0.10722E	03	0.10525E	01	0.12118E	00	0.96144E	00	0.43823E-02	0.10761E
0.10801E	03	0.10951E	01	0.12517E	00	0.95779E	00	0.41850E-02	0.10839E
0.10880E	03	0.11196E	01	0.11917E	00	0.95895E	00	0.42982E-02	0.10920E
0.10961E	03	0.10540E	01	0.11507E	00	0.96123E	00	0.41607E-02	0.11001E
0.11042E	03	0.11230E	01	0.11128E	00	0.95883E	00	0.41438E-02	0.11083E
0.11124E	03	0.10615E	01	0.11436E	00	0.96670E	00	0.41593E-02	0.11166E
0.11207E	03	0.11657E	01	0.13792E	00	0.95727E	00	0.44671E-02	0.11249E
0.11291E	03	0.10101E	01	0.11236E	00	0.96281E	00	0.44073E-02	0.11334E
0.11374E	03	0.10109E	00	0.10271E	00	0.96638E	00	0.37340E-02	0.11419E
0.11462E	03	0.97406E	00	0.10409E	00	0.96409E	00	0.37751E-02	0.11506E
0.11549E	03	0.66198E	00	0.10183E	00	0.97555E	00	0.37369E-02	0.11593E
0.11637E	03	0.82464E	00	0.99700E-01	00	0.96958E	00	0.36355E-02	0.11681E
0.11726E	03	0.79247E	00	0.97119E-01	00	0.97077E	00	0.35491E-02	0.11771E
0.11816E	03	0.91476E	00	0.10135E	00	0.96626E	00	0.36844E-02	0.11861E
0.11907E	03	0.74144E	00	0.10032E	00	0.97257E	00	0.36773E-02	0.11953E
0.11999E	03	0.83431E	00	0.10222E	00	0.96918E	00	0.37262E-02	0.12045E
0.12092E	03	0.63141E	00	0.97415E-01	00	0.97662E	00	0.35789E-02	0.12139E
0.12186E	03	0.80182E	00	0.95201E-01	00	0.97044E	00	0.34750E-02	0.12234E
0.12282E	03	0.87302E	00	0.96247E-01	00	0.96781E	00	0.35046E-02	0.12330E
0.12378E	03	0.65441E	00	0.95414E-01	00	0.97583E	00	0.33568E-02	0.12427E
0.12476E	03	0.66521E	00	0.97018E-01	00	0.97539E	00	0.33833E-02	0.12525E
0.12574E	03	0.62562E	00	0.92705E-01	00	0.97687E	00	0.34066E-02	0.12624E
0.12674E	03	0.46961E	00	0.91690E-01	00	0.98258E	00	0.33890E-02	0.12725E
0.12775E	03	0.59415E	00	0.87358E-01	00	0.97799E	00	0.32136E-02	0.12826E
0.12878E	03	0.57382E	00	0.90980E-01	00	0.97875E	00	0.33507E-02	0.12929E
0.12981E	03	0.44944E	00	0.87605E-01	00	0.98339E	00	0.32409E-02	0.13033E
0.13086E	03	0.47625E	00	0.89140E-01	00	0.98235E	00	0.32943E-02	0.13139E
0.13192E	03	0.61134E	00	0.88461E-01	00	0.97733E	00	0.32527E-02	0.13246E
0.13300E	03	0.50296E	00	0.84737E-01	00	0.98134E	00	0.31284E-02	0.13354E
0.13408E	03	0.31949E	00	0.85788E-01	00	0.98812E	00	0.31890E-02	0.13463E
0.13518E	03	0.33748E	00	0.80927E-01	00	0.98747E	00	0.31550E-02	0.13574E
0.13630E	03	0.51488E	00	0.86358E-01	00	0.98091E	00	0.31864E-02	0.13686E
0.13742E	03	0.41041E	00	0.81389E-01	00	0.98479E	00	0.30152E-02	0.13799E
0.13857E	03	0.41659E	00	0.83972E-01	00	0.99852E	00	0.31544E-02	0.13914E
0.13972E	03	0.28882E	00	0.86241E-01	00	0.98934E	00	0.32100E-02	0.14031E
0.14089E	03	0.37324E	00	0.82962E-01	00	0.98613E	00	0.30780E-02	0.14148E
0.14208E	03	0.26368E	00	0.83074E-01	00	0.99023E	00	0.30944E-02	0.14268E
0.14328E	03	0.28644E	00	0.84867E-01	00	0.98934E	00	0.31583E-02	0.14388E
0.14449E	03	0.22251E	00	0.80896E-01	00	0.99174E	00	0.31583E-02	0.14508E
0.14573E	03	0.15560E	00	0.80814E-01	00	0.99423E	00	0.30227E-02	0.14635E
0.14697E	03	0.18721E	00	0.81406E-01	00	0.99309E	00	0.30814E-02	0.14760E
0.14824E	03	0.23956E	00	0.80920E-01	00	0.99114E	00	0.30176E-02	0.14887E
0.14952E	03	0.26115E	00	0.80253E-01	00	0.99028E	00	0.29898E-02	0.15016E
0.15081E	03	0.42019E	00	0.77762E-01	00	0.98440E	00	0.26757E-02	0.15147E
0.15212E	03	0.24742E	00	0.78998E-01	00	0.99082E	00	0.29450E-02	0.15279E
0.15345E	03	0.31205E	00	0.76104E-01	00	0.98840E	00	0.28297E-02	0.15413E
0.15480E	03	0.50061E	00	0.78241E-01	00	0.98145E	00	0.28895E-02	0.15548E
0.15617E	03	0.60111E	00	0.75671E-01	00	0.97769E	00	0.27831E-02	0.15686E
0.15755E	03	0.76982E	00	0.77671E-01	00	0.97152E	00	0.28385E-02	0.16095E
0.16131E	03	0.14607E	01	0.96943E-01	00	0.94662E	00	0.34523E-02	0.16167E
0.16203E	03	0.14545E	01	0.97358E-01	00	0.94690E	00	0.34680E-02	0.16240E
0.16276E	03	0.16240E	01	0.97134E-					

ENERGY	X-SECTION	X-ERROR	TRANS	T-ERROR	ENERGY	X-SECTION	X-ERROR	TRANS	T-ERROR
0.17351E-03	0.67092E-01	0.95033E-01	0.77706E-02	0.27778E-02	0.17391E-03	0.70509E-01	0.94018E-01	0.76717E-02	0.27114E-02
0.17431E-03	0.71932E-01	0.92862E-01	0.76297E-02	0.26655E-02	0.17472E-03	0.77525E-01	0.93628E-01	0.74714E-02	0.26313E-02
0.17513E-03	0.79662E-01	0.93759E-01	0.74123E-02	0.26146E-02	0.17554E-03	0.81884E-01	0.94235E-01	0.73495E-02	0.26057E-02
0.17595E-03	0.84645E-01	0.95045E-01	0.72735E-02	0.26007E-02	0.17636E-03	0.87855E-01	0.93883E-01	0.71867E-02	0.25361E-02
0.17677E-03	0.91609E-01	0.97293E-01	0.70853E-02	0.25932E-02	0.17718E-03	0.94930E-01	0.95404E-01	0.69975E-02	0.25111E-02
0.17760E-03	0.97771E-01	0.95104E-01	0.69231E-02	0.24770E-02	0.17802E-03	0.10177E-02	0.90663E-01	0.68201E-02	0.24134E-02
0.17844E-03	0.10393E-02	0.98243E-01	0.67651E-02	0.24700E-02	0.17886E-03	0.10915E-02	0.96798E-01	0.66335E-02	0.24155E-02
0.17928E-03	0.10968E-02	0.97763E-01	0.66204E-02	0.24348E-02	0.17970E-03	0.11443E-02	0.97873E-01	0.65303E-02	0.23945E-02
0.18013E-03	0.11655E-02	0.96978E-01	0.64508E-02	0.23536E-02	0.18055E-03	0.12054E-02	0.96466E-01	0.63550E-02	0.23061E-02
0.18098E-03	0.12253E-02	0.96215E-01	0.63075E-02	0.22833E-02	0.18141E-03	0.12583E-02	0.95613E-01	0.62297E-02	0.22405E-02
0.18184E-03	0.12793E-02	0.95524E-01	0.61808E-02	0.22208E-02	0.18228E-03	0.13098E-02	0.97580E-01	0.61098E-02	0.22429E-02
0.18271E-03	0.13200E-02	0.95787E-01	0.60874E-02	0.21936E-02	0.18315E-03	0.13417E-02	0.96292E-01	0.60373E-02	0.21870E-02
0.18358E-03	0.13770E-02	0.96672E-01	0.59579E-02	0.21677E-02	0.18402E-03	0.14022E-02	0.94998E-01	0.59020E-02	0.21091E-02
0.18446E-03	0.13930E-02	0.96360E-01	0.59223E-02	0.21468E-02	0.18490E-03	0.13792E-02	0.95806E-01	0.59526E-02	0.21453E-02
0.18535E-03	0.14131E-02	0.95312E-01	0.58774E-02	0.21074E-02	0.18579E-03	0.14288E-02	0.96226E-01	0.58428E-02	0.21151E-02
0.18624E-03	0.14284E-02	0.95545E-01	0.58437E-02	0.21004E-02	0.18669E-03	0.14458E-02	0.95938E-01	0.58055E-02	0.20953E-02
0.18714E-03	0.14310E-02	0.98976E-01	0.58382E-02	0.21736E-02	0.18759E-03	0.14346E-02	0.96056E-01	0.58299E-02	0.21065E-02
0.18804E-03	0.14176E-02	0.94427E-01	0.58676E-02	0.20843E-02	0.18850E-03	0.14304E-02	0.94119E-01	0.58391E-02	0.20674E-02
0.18895E-03	0.14164E-02	0.95024E-01	0.58702E-02	0.20984E-02	0.18941E-03	0.14359E-02	0.92581E-01	0.58272E-02	0.20295E-02
0.18987E-03	0.14216E-02	0.92308E-01	0.58363E-02	0.20266E-02	0.19033E-03	0.13892E-02	0.93770E-01	0.59309E-02	0.20922E-02
0.19080E-03	0.13861E-02	0.92265E-01	0.59370E-02	0.20607E-02	0.19126E-03	0.13775E-02	0.92950E-01	0.59565E-02	0.20828E-02
0.19173E-03	0.13813E-02	0.92912E-01	0.59483E-02	0.20789E-02	0.19220E-03	0.13658E-02	0.94470E-01	0.59833E-02	0.21266E-02
0.19267E-03	0.13895E-02	0.93765E-01	0.60194E-02	0.21232E-02	0.19314E-03	0.13526E-02	0.94538E-01	0.60125E-02	0.21383E-02
0.19361E-03	0.13349E-02	0.92718E-01	0.60522E-02	0.21155E-02	0.19409E-03	0.13250E-02	0.93251E-01	0.60755E-02	0.21313E-02
0.19457E-03	0.13172E-02	0.89531E-01	0.60931E-02	0.20521E-02	0.19506E-03	0.12903E-02	0.91131E-01	0.61555E-02	0.21106E-02
0.19553E-03	0.12879E-02	0.91745E-01	0.61606E-02	0.21264E-02	0.19601E-03	0.12733E-02	0.89571E-01	0.61983E-02	0.20871E-02
0.19649E-03	0.12723E-02	0.92299E-01	0.61971E-02	0.21513E-02	0.19698E-03	0.12470E-02	0.90257E-01	0.62563E-02	0.21241E-02
0.19747E-03	0.12290E-02	0.88767E-01	0.62985E-02	0.21034E-02	0.19795E-03	0.12250E-02	0.88588E-01	0.63081E-02	0.21091E-02
0.19845E-03	0.11905E-02	0.88904E-01	0.63908E-02	0.21372E-02	0.19894E-03	0.11986E-02	0.90120E-01	0.63715E-02	0.21600E-02
0.19943E-03	0.11712E-02	0.89594E-01	0.64371E-02	0.21698E-02	0.19993E-03	0.11691E-02	0.89523E-01	0.64425E-02	0.21656E-02
0.20043E-03	0.11392E-02	0.90690E-01	0.65149E-02	0.22225E-02	0.20093E-03	0.11405E-02	0.90093E-01	0.65121E-02	0.22070E-02
0.20143E-03	0.11316E-02	0.91126E-01	0.65339E-02	0.22359E-02	0.20194E-03	0.11164E-02	0.91882E-01	0.65715E-02	0.22716E-02
0.20244E-03	0.11104E-02	0.93830E-01	0.65861E-02	0.23247E-02	0.20295E-03	0.10752E-02	0.93475E-01	0.66742E-02	0.23468E-02
0.20346E-03	0.10798E-02	0.90753E-01	0.66623E-02	0.22748E-02	0.20397E-03	0.10753E-02	0.91383E-01	0.66736E-02	0.22941E-02
0.20449E-03	0.10453E-02	0.90312E-01	0.67491E-02	0.22928E-02	0.20500E-03	0.10287E-02	0.89928E-01	0.67918E-02	0.22978E-02
0.20552E-03	0.10323E-02	0.88307E-01	0.67825E-02	0.22532E-02	0.20604E-03	0.10009E-02	0.86873E-01	0.68630E-02	0.22428E-02
0.20656E-03	0.10111E-02	0.86687E-01	0.68365E-02	0.22295E-02	0.20709E-03	0.98261E-01	0.86026E-01	0.69102E-02	0.22885E-02
0.20761E-03	0.97331E-01	0.86190E-01	0.69347E-02	0.22483E-02	0.20814E-03	0.96844E-01	0.85265E-01	0.69476E-02	0.22285E-02
0.20867E-03	0.96186E-01	0.84588E-01	0.69643E-02	0.22162E-02	0.20920E-03	0.94022E-01	0.85641E-01	0.70212E-02	0.22621E-02
0.20974E-03	0.93127E-01	0.84114E-01	0.70457E-02	0.22296E-02	0.21027E-03	0.91424E-01	0.85171E-01	0.70908E-02	0.22723E-02
0.21081E-03	0.92024E-01	0.82404E-01	0.70744E-02	0.21834E-02	0.21135E-03	0.90354E-01	0.82371E-01	0.71888E-02	0.22060E-02
0.21189E-03	0.89031E-01	0.82788E-01	0.71545E-02	0.22288E-02	0.21244E-03	0.88636E-01	0.81075E-01	0.71554E-02	0.22393E-02
0.21298E-03	0.88252E-01	0.82871E-01	0.71754E-02	0.22608E-02	0.21353E-03	0.88262E-01	0.81841E-01	0.71575E-02	0.22505E-02
0.21408E-03	0.85978E-01	0.82808E-01	0.72375E-02	0.22548E-02	0.21464E-03	0.85356E-01	0.83432E-01	0.72541E-02	0.22767E-02
0.21519E-03	0.83087E-01	0.82580E-01	0.73163E-02	0.22728E-02	0.21575E-03	0.83667E-01	0.82229E-01	0.73005E-02	0.22583E-02
0.21631E-03	0.82566E-01	0.82517E-01	0.73308E-02	0.22755E-02	0.21687E-03	0.83143E-01	0.82806E-01	0.73151E-02	0.22765E-02
0.21743E-03	0.83469E-01	0.80054E-01	0.73058E-02	0.22002E-02	0.21800E-03	0.81403E-01	0.79251E-01	0.73626E-02	0.21951E-02
0.21856E-03	0.79954E-01	0.80338E-01	0.74029E-02	0.22374E-02	0.21914E-03	0.78967E-01	0.80143E-01	0.74303E-02	0.22402E-02
0.21971E-03	0.78288E-01	0.80411E-01	0.74492E-02	0.22533E-02	0.22028E-03	0.77585E-01	0.80396E-01	0.74690E-02	0.22559E-02
0.22086E-03	0.77662E-01	0.79321E-01	0.74675E-02	0.22283E-02	0.22144E-03	0.76701E-01	0.80603E-01	0.74941E-02	0.22724E-02
0.22202E-03	0.77150E-01	0.79795E-01	0.74817E-02	0.22456E-02	0.22260E-03	0.75164E-01	0.76470E-01	0.75373E-02	0.21683E-02
0.22319E-03	0.77146E-01	0.77454E-01	0.75951E-02	0.22131E-02	0.22378E-03	0.73434E-01	0.80047E-01	0.75879E-02	0.22853E-02
0.22437E-03	0.77389E-01	0.79680E-01	0.75736E-02	0.22701E-02	0.22496E-03	0.72995E-01	0.78578E-01	0.75992E-02	0.22463E-02
0.22556E-03	0.77384E-01	0.78994E-01	0.75751E-02	0.22511E-02	0.22615E-03	0.72108E-01	0.77736E-01	0.76246E-02	0.22297E-02
0.22675E-03	0.77075E-01	0.75725E-01	0.76633E-02	0.22831E-02	0.22766E-03	0.70844E-01	0.55359E-01	0.76611E-02	0.15955E-02
0.22887E-03	0.69242E-01	0.54909E-01	0.77075E-02	0.15921E-02	0.23010E-03	0.67114E-01	0.54075E-01	0.77693E-02	0.15805E-02
0.23133E-03	0.66608E-01	0.53828E-01	0.77839E-02	0.15761E-02	0.23258E-03	0.66419E-01	0.53245E-01	0.77896E-02	0.15603E-02
0.23383E-03	0.65459E-01	0.54223E-01	0.78181E-02	0.15949E-02	0.23510E-03	0.65709E-01	0.53616E-01	0.78108E-02	0.15755E-02
0.23637E-03	0.62708E-01	0.52853E-01	0.78991E-02	0.15705E-02	0.23766E-03	0.61721E-01	0.53093E-01	0.79287E-02	0.15831E-02
0.23895E-03	0.62046E-01	0.52264E-01	0.79191E-02	0.15569E-02	0.24028E-03	0.60126E-01	0.52711E-01	0.79798E-02	0.15818E-02
0.24158E-03	0.59024E-01	0.52057E-01	0.80095E-02	0.15658E-02	0.24290E-03	0.59069E-01	0.52505E-01	0.80079E-02	0.15818E-02
0.24424E-03	0.58248E-01	0.50332E-01	0.80332E-02	0.15372E-02	0.24559E-03	0.57014E-01	0.51179E-01	0.80770E-02	0.15725E-02
0.24695E-03	0.56686E-01	0.51133E-01	0.80799E-02	0.15542E-02	0.24833E-03	0.55561E-01	0.50909E-01	0.81145E-02	0.15540E-02
0.24971E-03	0.55609E-01	0.50507E-01	0.81129E-02	0.15415E-02	0.25111E-03	0.55251E-01	0.51053E-01	0.81240E-02	0.15603E-02
0.25251E-03	0.54886E-01	0.51028E-01	0.81351E-02	0.15617E-02	0.25393E-03	0.54014E-01	0.50147E-01	0.81616E-02	0.15397E-02
0.25536E-03	0.53984E-01	0.50459E-01	0.81628E-02	0.15495E-02	0.25681E-03	0.53190E-01	0.50237E-01	0.81870E-02	0.15472E-02
0.25826E-03	0.52520E-01	0.49750E-01	0.82080E-02	0.15362E-02	0.25973E-03	0.51273E-01	0.49311E-01	0.82464E-02	0.15297E-02
0.26121E-03	0.52176E-01	0.49223E-01	0.82184E-02	0.15219E-02	0.26270E-03	0.50758E-01	0.48935E-01	0.82622E-02	0.15210E-02
0.26421E-03	0.50320E-01	0.48625E-01	0.82759E-02	0.15139E-02	0.26573E-03	0.49402E-01	0.48874E-01	0.83045E-02	0.15269E-02
0.26726E-03	0.48795E-01	0.48755E-01	0.83235E-02	0.15266E-02	0.26881E-03	0.48753E-01	0.47951E-01	0.83248E-02	0.15017E-02
0.27037E-03	0.47875E-01	0.48201E-01	0.83523E-02	0.15145E-02	0.27194E-03	0.47155E-01	0.49539E-01	0.83750E-02	0.15608E-02
0.27353E-03	0.47568E-01	0.48674E-01	0.83619E-02	0.15311E-02	0.27513E-03	0.47109E-01	0.47830E-01	0.83765E-02	0.15072E-02
0.27674E-03	0.47600E-01	0.47819E-01	0.83799E-02	0.15075E-02	0.27837E-03	0.45975E-01	0.47454E-01	0.84122E-02	0.15018E-02
0.28001E-03	0.46139E-01	0.48168E-01	0.84069E-02	0.15233E-02	0.28167E-03	0.45123E-01	0.47881E-01	0.84395E-02	0.15202E-02
0.28334E-03	0.45279E-01	0.							

ENERGY	T-SECTION	X-ERROR	TRANS	T-ERROR	ENERGY	X-SECTION	X-ERROR	TRANS	T-ERROR						
0.40436E	03	0.34088E	01	0.52904E-01	0.87837E	00	0.17481E-02	0.40724E	03	0.33712E	01	0.53902E-01	0.88092E	00	0.17532E-02
0.41015E	03	0.33952E	01	0.52608E-01	0.88010E	00	0.17418E-02	0.41308E	03	0.34687E	01	0.53766E-01	0.87772E	00	0.17754E-02
0.41606E	03	0.33755E	01	0.54088E-01	0.88081E	00	0.18055E-02	0.41907E	03	0.33444E	01	0.54930E-01	0.88182E	00	0.18223E-02
0.42211E	03	0.33292E	01	0.55202E-01	0.88233E	00	0.18373E-02	0.42518E	03	0.33120E	01	0.56017E-01	0.88250E	00	0.18605E-02
0.42829E	03	0.32772E	01	0.56362E-01	0.88406E	00	0.18795E-02	0.43142E	03	0.32547E	01	0.56374E-01	0.88484E	00	0.19431E-02
0.43460E	03	0.31217E	01	0.58581E-01	0.88926E	00	0.19596E-02	0.43781E	03	0.31410E	01	0.56865E-01	0.88861E	00	0.19101E-02
0.44105E	03	0.31743E	01	0.56515E-01	0.88748E	00	0.18869E-02	0.44433E	03	0.31960E	01	0.55851E-01	0.88676E	00	0.18632E-02
0.44765E	03	0.31342E	01	0.55457E-01	0.88884E	00	0.18544E-02	0.45101E	03	0.30877E	01	0.54753E-01	0.89038E	00	0.18340E-02
0.45404E	03	0.30328E	01	0.54975E-01	0.89222E	00	0.18452E-02	0.45783E	03	0.30129E	01	0.54417E-01	0.89290E	00	0.18279E-02
0.46130E	03	0.30286E	01	0.54237E-01	0.89236E	00	0.18207E-02	0.46481E	03	0.30245E	01	0.54058E-01	0.89252E	00	0.18151E-02
0.46836E	03	0.30567E	01	0.53934E-01	0.89141E	00	0.18087E-02	0.47196E	03	0.30513E	01	0.54132E-01	0.89160E	00	0.18157E-02
0.47559E	03	0.29783E	01	0.53943E-01	0.89406E	00	0.18144E-02	0.47926E	03	0.29631E	01	0.53512E-01	0.89455E	00	0.18008E-02
0.48298E	03	0.29567E	01	0.53946E-01	0.89380E	00	0.18139E-02	0.48674E	03	0.29746E	01	0.53831E-01	0.89418E	00	0.18108E-02
0.49055E	03	0.29187E	01	0.54353E-01	0.89606E	00	0.18336E-02	0.49440E	03	0.29561E	01	0.54864E-01	0.89480E	00	0.18068E-02
0.49829E	03	0.29186E	01	0.54325E-01	0.89606E	00	0.18313E-02	0.50223E	03	0.28594E	01	0.54452E-01	0.89807E	00	0.18350E-02
0.50622E	03	0.28776E	01	0.54452E-01	0.89744E	00	0.18384E-02	0.51026E	03	0.28525E	01	0.54519E-01	0.89828E	00	0.18424E-02
0.51434E	03	0.28594E	01	0.49687E-01	0.89824E	00	0.16751E-02	0.51888E	03	0.28272E	01	0.49184E-01	0.89916E	00	0.16637E-02
0.52161E	03	0.28423E	01	0.69703E-01	0.89863E	00	0.23564E-02	0.52372E	03	0.29079E	01	0.70943E-01	0.89943E	00	0.22925E-02
0.52584E	03	0.29232E	01	0.72328E-01	0.89590E	00	0.24377E-02	0.52797E	03	0.30211E	01	0.73700E-01	0.89263E	00	0.22959E-02
0.52914E	03	0.30396E	01	0.23170E	0.89195E	00	0.77474E-02	0.52936E	03	0.28586E	01	0.23052E	00	0.77679E-02	
0.52957E	03	0.32611E	01	0.23082E	0.88457E	00	0.77806E-02	0.53692E	03	0.26168E	01	0.23101E	00	0.78169E-02	
0.53000E	03	0.31927E	01	0.23269E	0.88655E	00	0.77623E-02	0.53022E	03	0.33289E	01	0.22966E	00	0.88230E	
0.53043E	03	0.34794E	01	0.22683E	0.87732E	00	0.74863E-02	0.53065E	03	0.35318E	01	0.22609E	00	0.87559E	
0.53086E	03	0.35284E	01	0.22809E	0.87570E	00	0.75141E-02	0.53102E	03	0.36989E	01	0.23246E	00	0.87010E	
0.53113E	03	0.37118E	01	0.32532E	0.86967E	00	0.10643E-01	0.53124E	03	0.41354E	01	0.32303E	00	0.85592E	
0.53135E	03	0.49696E	01	0.32421E	0.83144E	00	0.10141E-01	0.53146E	03	0.51877E	01	0.33070E	00	0.82771E	
0.53156E	03	0.56432E	01	0.33676E	0.80873E	00	0.10246E-01	0.53167E	03	0.64174E	01	0.34246E	00	0.78551E	
0.53178E	03	0.80315E	01	0.33936E	0.73924E	00	0.94375E-02	0.53189E	03	0.93178E	01	0.33857E	00	0.70431E	
0.53200E	03	0.11185E	02	0.33883E	0.65655E	00	0.83687E-02	0.53210E	03	0.13754E	02	0.36682E	00	0.59606E	
0.53221E	03	0.13933E	02	0.34788E	0.59206E	00	0.77463E-02	0.53232E	03	0.14076E	02	0.34657E	00	0.58887E	
0.53243E	03	0.12050E	02	0.33780E	0.63553E	00	0.80762E-02	0.53254E	03	0.91538E	01	0.33067E	00	0.70867E	
0.53264E	03	0.79721E	01	0.32755E	0.74089E	00	0.91294E-02	0.53275E	03	0.65038E	01	0.32784E	00	0.78296E	
0.53286E	03	0.55232E	01	0.32871E	0.81241E	00	0.10046E-01	0.53297E	03	0.48344E	01	0.32881E	00	0.83371E	
0.53308E	03	0.42569E	01	0.33059E	0.85202E	00	0.10596E-01	0.53319E	03	0.37026E	01	0.32782E	00	0.86998E	
0.53329E	03	0.36413E	01	0.32603E	0.87198E	00	0.10695E-01	0.53340E	03	0.35772E	01	0.32633E	00	0.87409E	
0.53351E	03	0.36954E	01	0.32525E	0.87021E	00	0.10648E-01	0.53362E	03	0.32487E	01	0.32323E	00	0.88496E	
0.53373E	03	0.29624E	01	0.32302E	0.89387E	00	0.10862E-01	0.53384E	03	0.28274E	01	0.31955E	00	0.89910E	
0.53400E	03	0.32032E	01	0.22552E	0.88650E	00	0.15209E-02	0.53406E	03	0.31880E	01	0.22594E	00	0.88599E	
0.53444E	03	0.30603E	01	0.22582E	0.89125E	00	0.15713E-02	0.53428E	03	0.31337E	01	0.22716E	00	0.88521E	
0.53487E	03	0.29644E	01	0.22726E	0.89449E	00	0.16143E-02	0.53450E	03	0.30078E	01	0.22636E	00	0.89168E	
0.53531E	03	0.30560E	01	0.22185E	0.89168E	00	0.16423E-02	0.53472E	03	0.33553E	01	0.22677E	00	0.88886E	
0.53574E	03	0.26028E	01	0.33179E	0.89801E	00	0.178303E-02	0.53494E	03	0.29589E	01	0.10113E	00	0.89470E	
0.53750E	03	0.28901E	01	0.10102E	0.89704E	00	0.34801E-02	0.53516E	03	0.28605E	01	0.10210E	00	0.89802E	
0.53797E	03	0.29372E	01	0.10242E	0.89541E	00	0.34501E-02	0.53538E	03	0.30937E	01	0.10035E	00	0.89017E	
0.54191E	03	0.28638E	01	0.10109E	0.89723E	00	0.34123E-02	0.53560E	03	0.29406E	01	0.96556E-01	0.89530E	00	0.33195E-02
0.54414E	03	0.30866E	01	0.10012E	0.89041E	00	0.33537E-02	0.53582E	03	0.31444E	01	0.97602E-01	0.88848E	00	0.32623E-02
0.54638E	03	0.31567E	01	0.97017E-01	0.88807E	00	0.32411E-02	0.53604E	03	0.32036E	01	0.99879E-01	0.88650E	00	0.33309E-02
0.54664E	03	0.31856E	01	0.99780E-01	0.88711E	00	0.33300E-02	0.53626E	03	0.34497E	01	0.10106E	00	0.88218E	
0.55040E	03	0.41431E	01	0.13971E	0.85571E	00	0.44974E-02	0.53648E	03	0.34886E	01	0.14043E	00	0.84783E	
0.55212E	03	0.44822E	01	0.14034E	0.84492E	00	0.44604E-02	0.53670E	03	0.45206E	01	0.14297E	00	0.84363E	
0.55636E	03	0.47530E	01	0.14246E	0.83627E	00	0.44819E-02	0.53692E	03	0.48574E	01	0.14196E	00	0.83301E	
0.55752E	03	0.53545E	01	0.14272E	0.81760E	00	0.43898E-02	0.53714E	03	0.56175E	01	0.14312E	00	0.80951E	
0.55868E	03	0.58429E	01	0.14568E	0.80273E	00	0.43996E-02	0.53736E	03	0.62329E	01	0.14379E	00	0.79103E	
0.55985E	03	0.68744E	01	0.14210E	0.77216E	00	0.41278E-02	0.53758E	03	0.56043E	01	0.14308E	00	0.76463E	
0.56101E	03	0.75448E	01	0.14764E	0.74169E	00	0.41193E-02	0.53780E	03	0.56160E	01	0.14600E	00	0.72066E	
0.56219E	03	0.92206E	01	0.14990E	0.70699E	00	0.39870E-02	0.53802E	03	0.56277E	01	0.14734E	00	0.68611E	
0.56336E	03	0.10869E	02	0.14960E	0.67447E	00	0.37957E-02	0.53824E	03	0.56395E	01	0.11322E	02	0.65320E	
0.56454E	03	0.11664E	02	0.14941E	0.64482E	00	0.36245E-02	0.53846E	03	0.56513E	01	0.11830E	02	0.65018E	
0.56572E	03	0.11951E	02	0.15264E	0.63759E	00	0.36561E-02	0.53868E	03	0.56631E	01	0.12032E	02	0.64411E	
0.56691E	03	0.11617E	02	0.14653E	0.61608E	00	0.35878E-02	0.53890E	03	0.56751E	01	0.11004E	02	0.64867E	
0.56810E	03	0.10341E	02	0.15229E	0.67775E	00	0.38819E-02	0.53912E	03	0.56870E	01	0.99310E	01	0.64758E	
0.56930E	03	0.94433E	01	0.14820E	0.70103E	00	0.35083E-02	0.53934E	03	0.56990E	01	0.14579E	00	0.72206E	
0.57050E	03	0.62755E	01	0.14558E	0.73257E	00	0.40124E-02	0.53956E	03	0.57110E	01	0.14429E	00	0.74927E	
0.57170E	03	0.72407E	01	0.14439E	0.76164E	00	0.41371E-02	0.53978E	03	0.57230E	01	0.14269E	00	0.76850E	
0.57290E	03	0.63570E	01	0.14359E	0.78731E	00	0.42529E-02	0.54000E	03	0.57351E	01	0.14205E	00	0.79074E	
0.57411E	03	0.59299E	01	0.14022E	0.80005E	00	0.42202E-02	0.54022E	03	0.57472E	01	0.14090E	00	0.82931E-02	
0.57533E	03	0.55807E	01	0.13932E	0.81048E	00	0.42479E-02	0.54044E	03	0.57594E	01	0.13758E	00	0.81965E	
0.57654E	03	0.50217E	01	0.13787E	0.82788E	00	0.42940E-02	0.54066E	03	0.57715E	01	0.13856E	00	0.83087E	
0.57775E	03	0.45958E	01	0.13877E	0.84126E	00	0.43918E-02	0.54088E	03	0.57838E	01	0.13674E	00	0.84149E	
0.57896E	03	0.45244E	01	0.13456E	0.84351E	00	0.42698E-02	0.54110E	03	0.57960E	01	0.13419E	00	0.84611E	
0.58022E	03	0.42853E	01	0.13279E	0.85119E										

ENERGY	X-SECTION	X-ERROR	TRANS	T-ERROR	ENERGY	X-SECTION	X-ERROR	TRANS	T-ERROR
0.60329E 03	0.34252E C1	0.30995E 00	0.87908E 00	0.10250E-C1	0.60342E 03	0.33648E 01	0.30919E 00	0.88110E 00	0.10248E-01
0.60355E 03	0.35142E 01	0.30667E 00	0.87616E 00	0.10108E-01	0.60368E 03	0.32398E 01	0.31091E 00	0.88526E 00	0.10354E-01
0.60407E 03	0.31544E 01	0.14012E 00	0.88811E 00	0.46815E-C2	0.60473E 03	0.33467E 01	0.14122E 00	0.88174E 00	0.46843E-02
0.60538E 03	0.31219E 01	0.14302E 00	0.88922E 00	0.47842E-02	0.60703E 03	0.31004E 01	0.70132E-01	0.88994E 00	0.23400E-01
0.60967E 03	0.30161E 01	0.70930E-01	0.89277E 00	0.23823E-02	0.61233E 03	0.30159E C1	0.71957E-01	0.89277E 00	0.20167E-02
0.61501E 03	0.30046E 01	0.73762E-01	0.89316E 00	0.24777E-C2	0.61770E 03	0.29563E 01	0.74418E-01	0.89483E 00	0.25051E-02
0.62042E 03	0.31041E 01	0.74894E-01	0.88982E 00	0.25071E-02	0.62315E 03	0.28963E 01	0.74437E-01	0.89680E 00	0.25114E-02
0.62590E 03	0.27716E 01	0.74017E-01	0.90104E 00	0.25050E-C2	0.62867E 03	0.27905E 01	0.72479E-01	0.90039E 00	0.24551E-02
0.63145E 03	0.27603E 01	0.77988E-01	0.90142E 00	0.26431E-C2	0.63426E 03	0.28170E 01	0.13747E 00	0.89956E 00	0.46524E-02
0.63708E 03	0.27514E 01	0.13256E 00	0.90177E 00	0.44972E-02	0.63992E 03	0.26882E C1	0.13067E 00	0.90391E 00	0.44434E-02
0.64278E 03	0.28657E 01	0.12795E 00	0.89789E 00	0.43221E-C2	0.64566E 03	0.30048E 01	0.12644E 00	0.89317E 00	0.42425E-02
0.64856E C3	0.30375E 01	0.12870E 00	0.89212E 00	0.43197E-02	0.65148E 03	0.30479E 01	0.10587E 00	0.89174E 00	0.35505E-02
0.65442E 03	0.28366E 01	0.10045E 00	0.89886E 00	0.33968E-02	0.65738E 03	0.29091E C1	0.57846E-01	0.89643E 00	0.32998E-02
0.66036E 03	0.28479E 01	0.96870E-01	0.89847E 00	0.32742E-C2	0.66336E 03	0.26420E 01	0.95801E-01	0.90543E 00	0.32632E-02
0.66638E 03	0.26670E 01	0.93752E-01	0.90459E 00	0.31905E-02	0.66942E 03	0.26819E 01	0.95171E-01	0.90407E 00	0.32366E-02
0.67248E 03	0.27559E 01	0.91703E-01	0.90166E 00	0.31107E-C2	0.67557E 03	0.27145E 01	0.91593E-01	0.90302E 00	0.31115E-02
0.67867E 03	0.27137E C1	0.89678E-01	0.90300E 00	0.30465E-C2	0.68180E 03	0.25728E 01	0.88489E-01	0.90783E 00	0.30222E-02
0.68494E 03	0.27509E 01	0.88484E-01	0.90176E 00	0.30018E-02	0.68811E 03	0.25490E 01	0.89399E-01	0.90863E 00	0.30555E-02
0.69130E 03	0.24290E 01	0.86660E-01	0.91275E 00	0.25758E-C2	0.69452E 03	0.25221E 01	0.85945E-01	0.90956E 00	0.29407E-02
0.69775E 03	0.26487E 01	0.86796E-01	0.90519E 00	0.29556E-02	0.70101E 03	0.25699E 01	0.87277E-01	0.90791E 00	0.29810E-02
0.70429E 03	0.26706E 01	0.86186E-01	0.90451E 00	0.29328E-02	0.70760E 03	0.25753E 01	0.87503E-01	0.90771E 00	0.29884E-02
0.71093E 03	0.25781E 01	0.84531E-01	0.90760E 00	0.28862E-C2	0.71428E 03	0.26020E 01	0.84170E-01	0.90682E 00	0.26714E-02
0.71765E 03	0.25083E 01	0.84028E-01	0.91000E 00	0.28764E-02	0.72105E 03	0.25170E C1	0.83617E-01	0.90968E 00	0.28616E-02
0.72447E 03	0.24030E 01	0.84853E-01	0.91363E 00	0.29166E-C2	0.72792E 03	0.24529E 01	0.82481E-01	0.91198E 00	0.28295E-02

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