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Evaluated Nuclear Data for

Hydrogen in the ENDF/B-II Format

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by

L. Stewart
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EVALUATED NUCLEAR DATA FOR HYDROGEN IN THE ENDF/B-II FORMAT

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L. Stewart, R. J. LaBauve, and P. G. Young

ABSTRACT

The following nuclear data are given for hydrogen in the energy range from 1.0×10^{-5} eV to 20.0 MeV.

File 1. The general information file includes a brief description of the data to follow.

File 2. Values for nuclear spin and effective scattering radius are given in the resonance file.

File 3. Smooth cross-section data are given for the total cross section, the free-atom elastic scattering cross section, and the radiative capture cross section; data for $\bar{\mu}$, ξ, and γ are also included.

File 4. The angular distributions for elastic scattering are given as probability vs cosine of the scattering angle.

File 7. The free-atom-scattering cross section is the only information provided at thermal.

File 12. Secondary gamma-ray production multiplicities for capture, which are equal to one, are given in this file.

File 14. Gamma-ray angular distributions are provided for the single radiative capture gamma ray.

INTRODUCTION

This evaluation for hydrogen (MAT = 1148) differs from the previous ENDF/B evaluation (MAT = 1001) in that the elastic scattering data were taken from recent work by Hopkins and Breit[1] and the data for radiative capture were taken from recent work by Horsley.[2] Also, gamma-ray production data, not given in the MAT = 1001 evaluation, are included. A complete listing for MAT = 1148 is given in the Appendix.

FILE 1: GENERAL INFORMATION

A brief summary of the data to follow is given in File 1. The atomic mass for hydrogen was taken to be 1.007825 from the May 1969 "Chart of the Nuclides."[3]

FILE 2: RESONANCE INFORMATION

Nuclear spin and effective scattering radius are given in this file. An effective scattering radius of 1.2756×10^{-12} cm is consistent with a potential scattering cross section of 20.449 b, as determined from $4\pi a^2$. Singlet and triplet scattering radii are not included.

FILE 3: SMOOTH CROSS SECTIONS

Total cross sections (MT = 1) were obtained by adding the elastic scattering and radiative capture cross sections at all energies (1.0×10^{-5} eV to 20.0 MeV). The hydrogen total cross-sections are shown in Fig. 1.

The elastic scattering cross sections (MT = 2) were taken from an extensive theoretical treatment of fast neutron measurements by Hopkins and Breit.[1] In this work, a consistent set of cross sections and angular distributions were obtained by using a set of phase shifts previously determined at Yale University.[4] Tabular values of the elastic scattering cross section are given in Ref. 1 for only a

few energies, the two lowest points being 100 and 200 keV. The phase shift program and the Yale phase shifts were provided by Hopkins[1] so that many intermediate points could be calculated. At 0.1 keV, the lowest energy recommended for running this program, the scattering cross section is 20.4488 b. This value is in excellent agreement with the thermal cross section (20.442 ± 0.023 b) derived by Davis and Barschall[5] from a revised value of the effective range obtained by determining the best values of the neutron energies from many experiments below 5 MeV performed since 1950. Therefore, for this evaluation, the free-atom-scattering cross section is assumed to be constant below 100 eV and equal to the value calculated from the Yale phase shifts at 100 eV, giving a thermal cross section of 20.449 b. At higher energies, these theoretical predictions are in excellent agreement with the recent measurements of Davis[6] giving an average value of 0.84 for the square of the deviation for energies below 20.0 MeV. The elastic cross section for hydrogen from 1.0×10^{-5} eV to 20.0 MeV is shown in Fig. 2.

The cross sections for radiative capture (MT = 102) were taken from the 1966 publication of Horsley,[2] where a value of 332 mb was adopted for the thermal value. Deuteron photodisintegration cross sections were also employed in deriving radiative capture in Horsley's report. Although the Nuclear Data article by Horsley[2] was referenced for MAT = 1001, the values were taken from an early version described in AWRE O-23/65, and these were later revised for the Nuclear Data article. The latter report (Ref. 2) has been used for this evaluation, as suggested by Horsley. The radiative capture cross section for MAT = 1148 from 1.0×10^{-5} eV to 20.0 MeV is shown in Fig. 3.

The average value of the cosine in the laboratory system ($\bar{\mu}_L$) for elastic scattering (MT = 251) was derived from the secondary angular distributions in File 4 (MT = 4). Values for $\bar{\mu}_L$ from 1.0×10^{-5} eV to 20.0 MeV are shown in Fig. 4.

Values for ξ, the average logarithmic energy change per collision (MT = 252), and for γ, the Goertzel-Greuling constant (MT = 253), are taken equal to 1 over the range 1.0×10^{-5} eV to 20.0 MeV, following the MT = 1001 evaluation.

FILE 4: SECONDARY ANGULAR DISTRIBUTIONS

Angular distributions of secondary neutrons resulting from elastic scattering are tabulated from 1.0×10^{-5} eV to 20.0 MeV. Distributions at 0.1, 5, 10, 20, and 30 MeV are provided by Ref. 1; additional and intermediate data were calculated by using the Hopkins-Breit phase shift program and the Yale phase shifts. As shown in Figs. 5 through 16, the angular distributions above 100 keV are neither isotropic below 10 MeV, nor are they symmetric about 90° at higher energies as assumed in the earlier version (MAT = 1001). At 100 keV, the angular distributions are assumed to be isotropic because the 180/0° ratio is very nearly unity (1.0011). At 500 keV, this ratio approaches 1.005; therefore, the pointwise normalized probabilities as a function of the cosine of the scattering angle are provided at 1.0×10^{-5} eV (isotropic), 100 keV (isotropic), 500 keV, and at 1-MeV intervals from 1 to 20 MeV.

FILE 5: THERMAL DATA

Free-atom cross sections specified from 1.0×10^{-5} eV to 5 eV are included in this file.

FILE 12: PHOTON PRODUCTION CROSS SECTIONS

A multiplicity representation is used to describe the single hydrogen radiative capture gamma ray from 1.0×10^{-5} eV to 20.0 MeV. The multiplicity is referred to MT = 102 in File 3 and is unity at all neutron energies. To adequately represent the gamma-ray energy for MeV-incident neutrons, the neutron energy region from 0.2 to 20 MeV is divided into 16 different energy bands, and the gamma-ray energy is tabulated for each neutron energy band as

$$\bar{E}_\gamma = 2.225 \times 10^6 + \bar{E}_n/2 \qquad (eV) \ ,$$

where $\bar{E}_n$ is the neutron energy at the midpoint of the band in eV. The value 2.225×10^6 eV corresponds to the deuteron binding energy; that is, the small energy change due to the nuclear recoil that accompanies gamma emission has been ignored.

FILE 14: GAMMA-RAY ANGULAR DISTRIBUTIONS

The gamma-ray angular distributions are assumed to be isotropic at all neutron energies from 1.0×10^{-5} eV to 20.0 MeV.
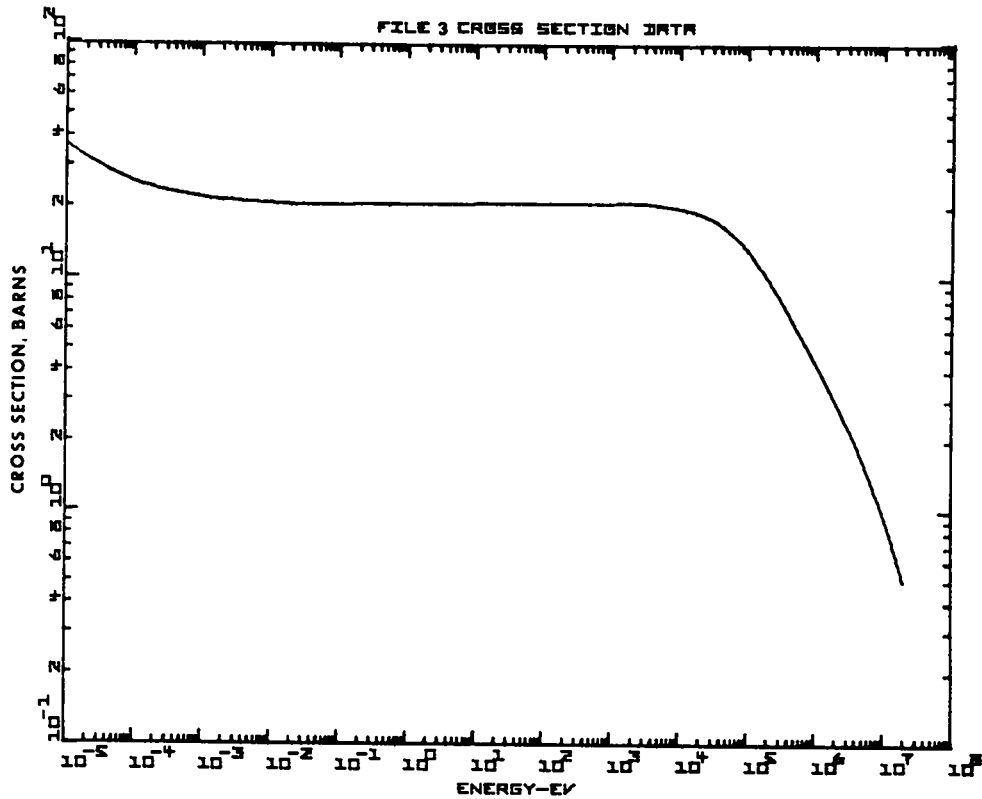
Fig. 1. Total cross section (MT = 1).
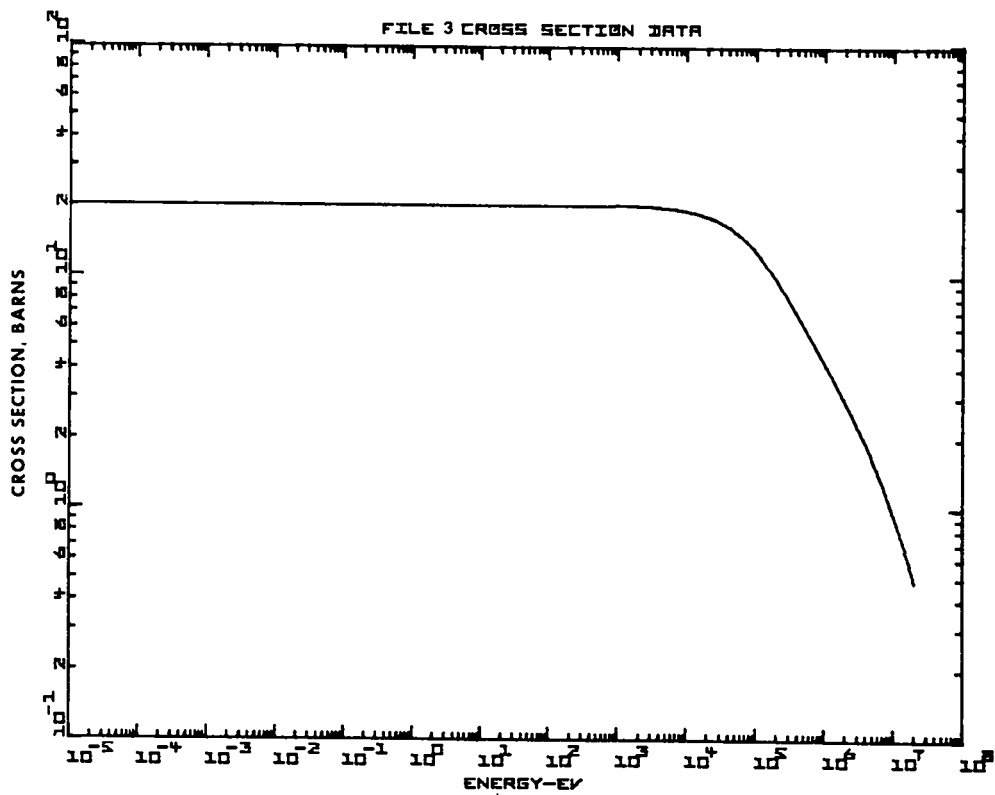
Fig. 2. Elastic scattering cross section (MT = 2).

3
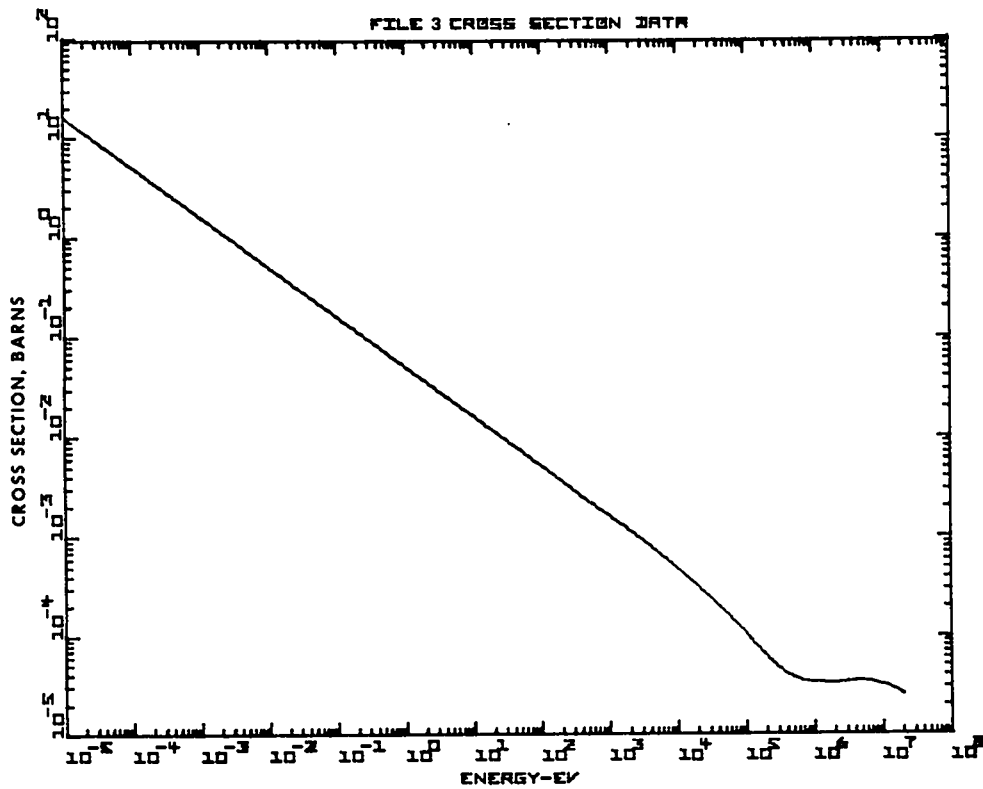
Fig. 3. Radiative capture cross section (MT = 102).
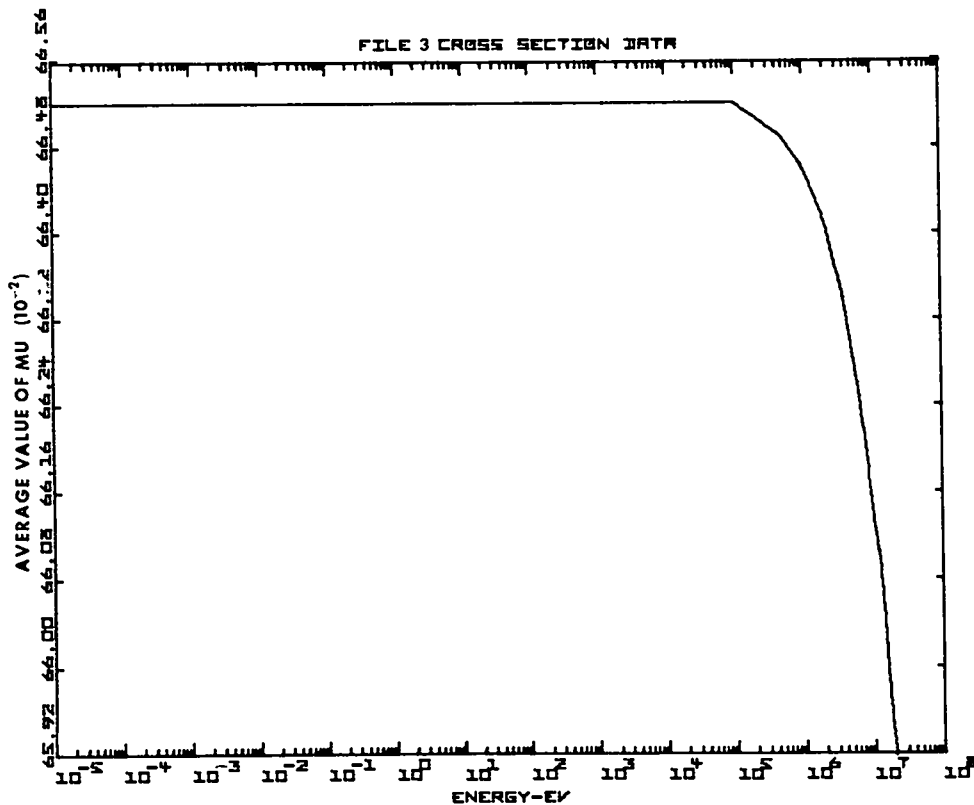
Fig. 4. Average value of cosine in laboratory system (MT = 251).

4

FILE 4 SECONDARY ANGULAR DISTRIBUTIONS
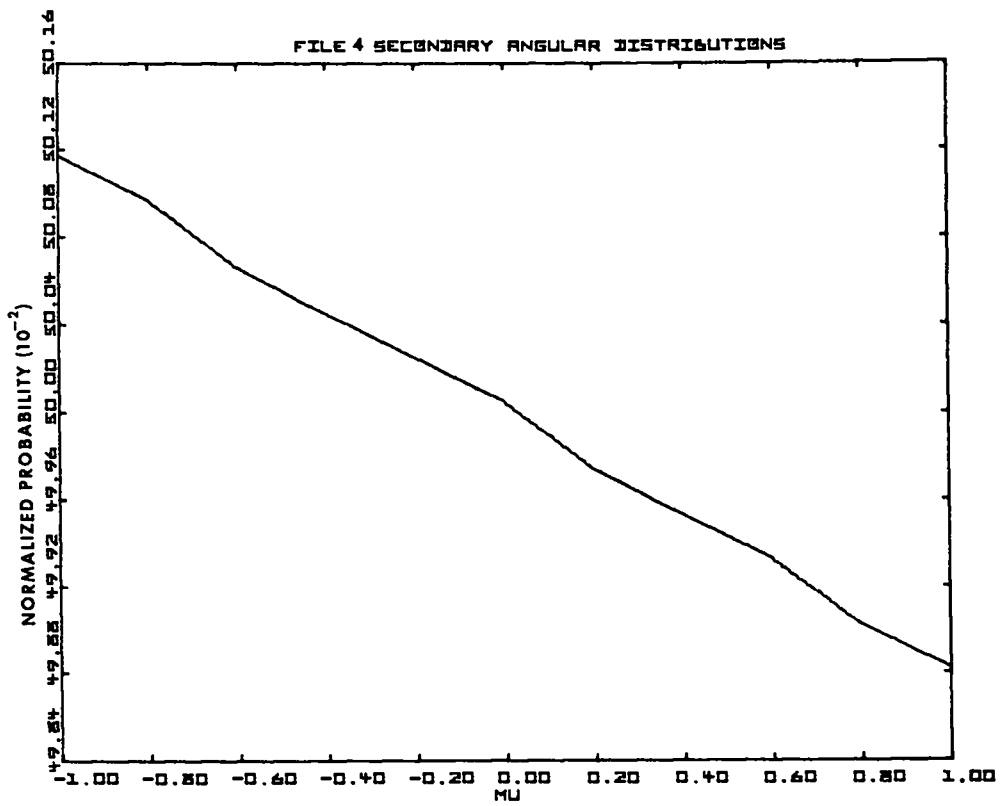
Fig. 5. Angular distribution for 0.5 MeV.

FILE 4 SECONDARY ANGULAR DISTRIBUTIONS
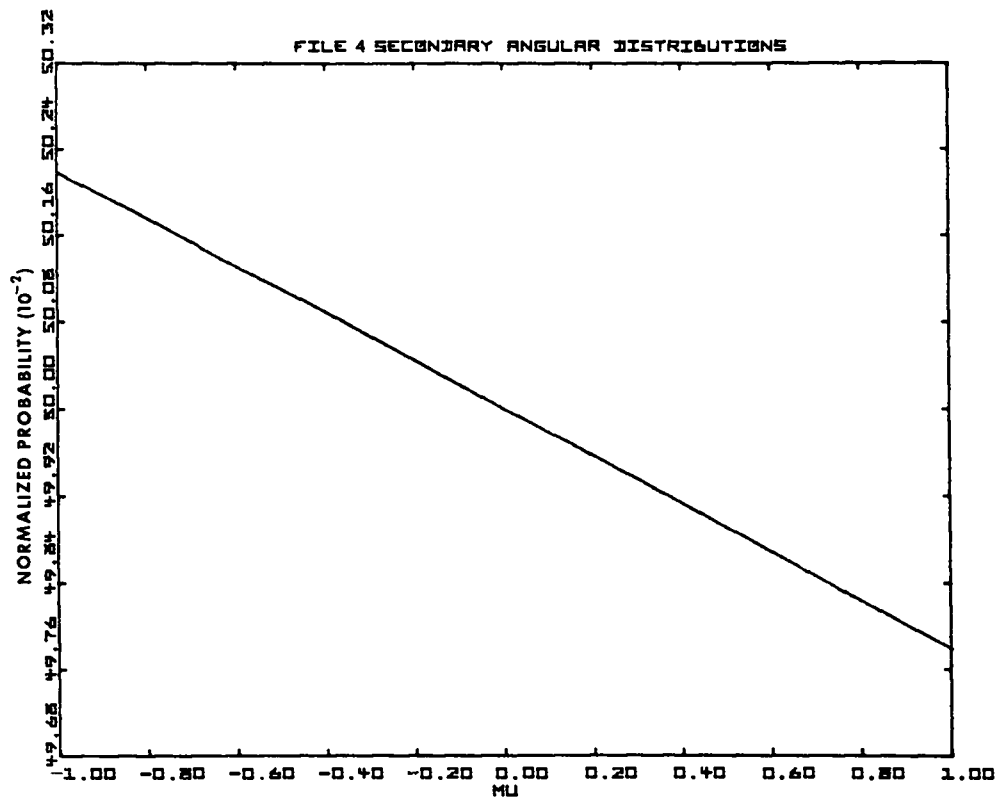
Fig. 6. Angular distribution for 1.0 MeV.

5

FILE 4 SECONDARY ANGULAR DISTRIBUTIONS
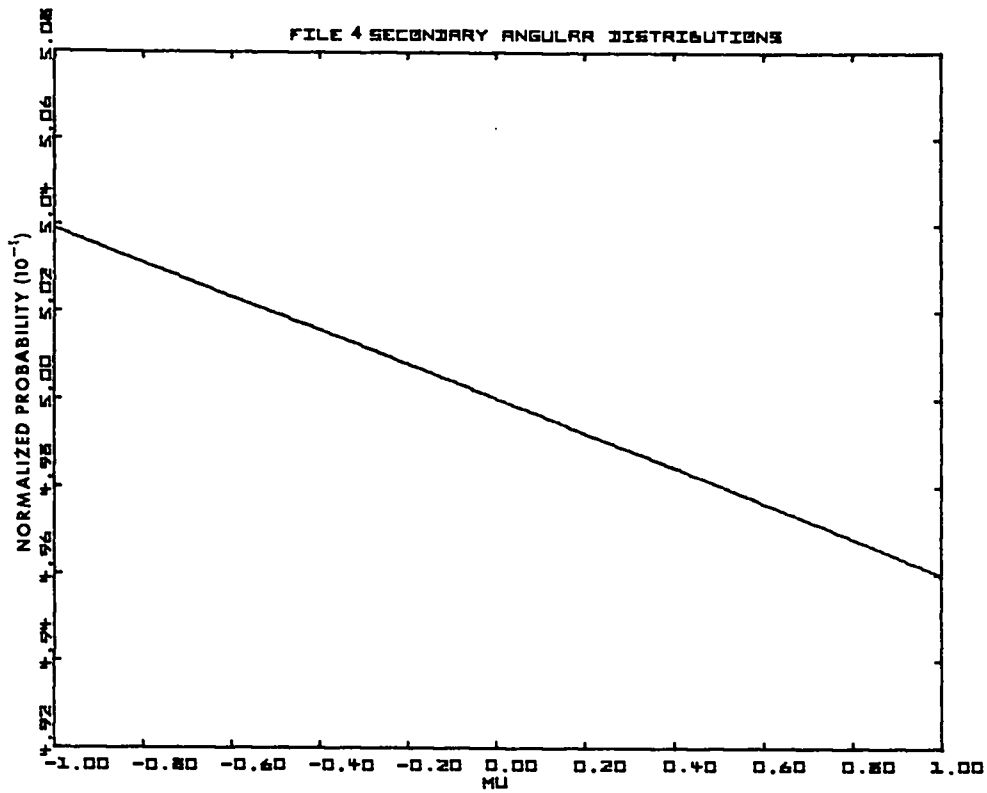
Fig. 7. Angular distribution for 2.0 MeV.

FILE 4 SECONDARY ANGULAR DISTRIBUTIONS
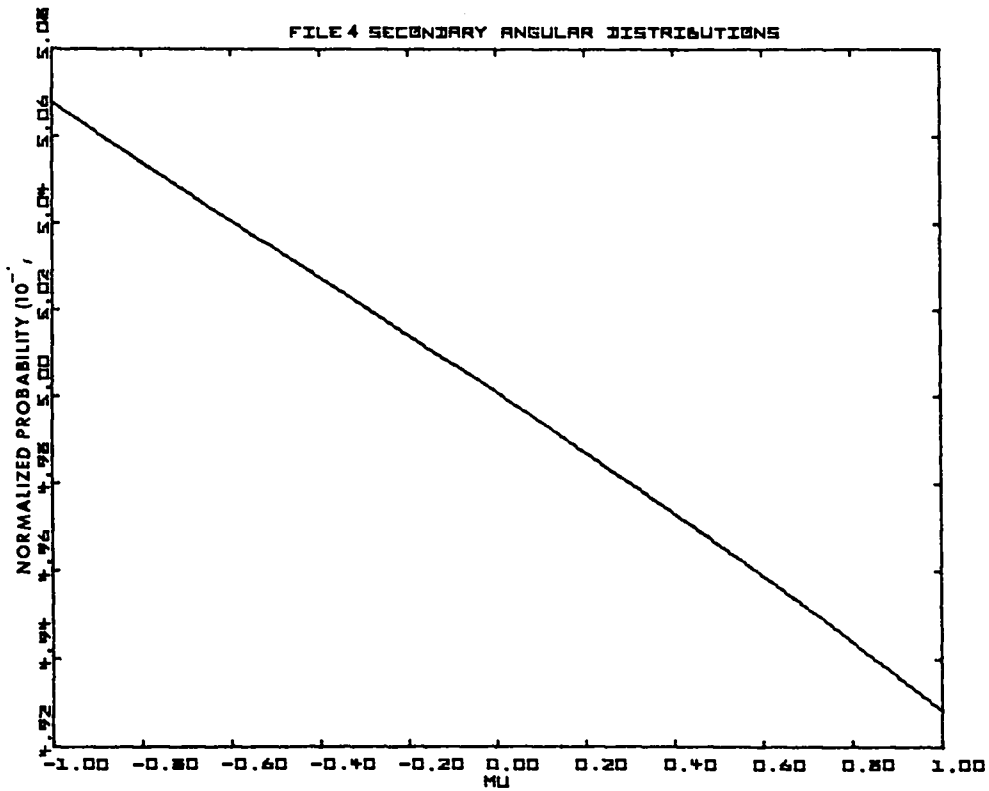
Fig. 8. Angular distribution for 4.0 MeV.

6

FILE 4 SECONDARY ANGULAR DISTRIBUTIONS
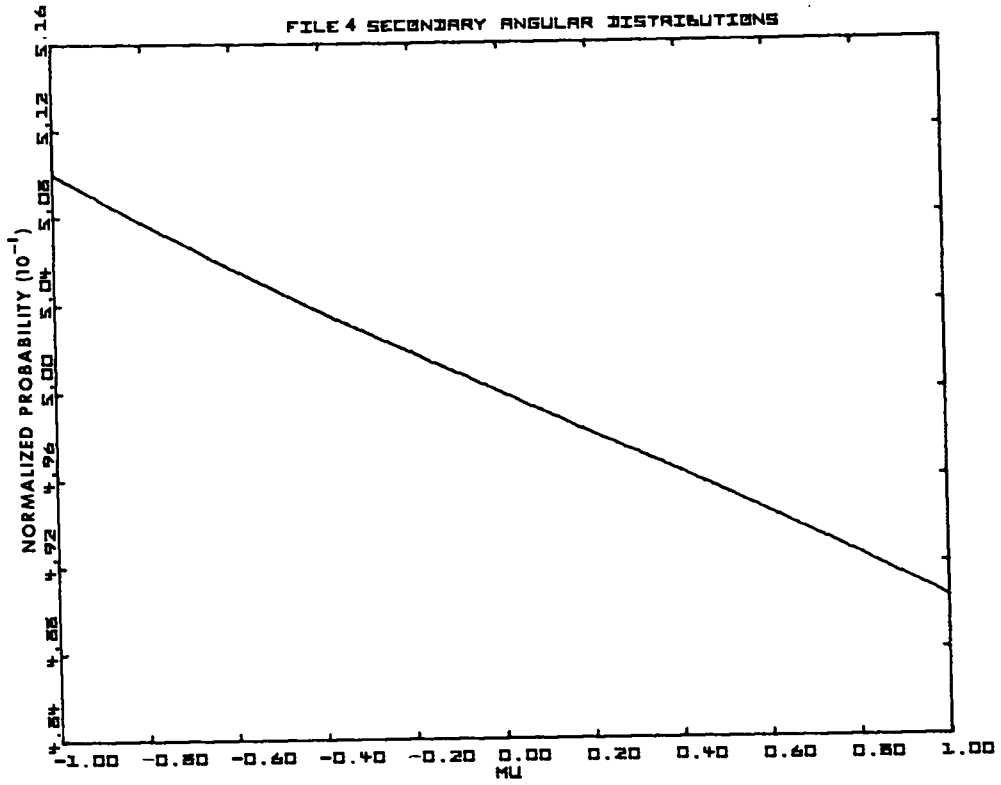
Fig. 9. Angular distribution for 6.0 MeV.

FILE 4 SECONDARY ANGULAR DISTRIBUTIONS
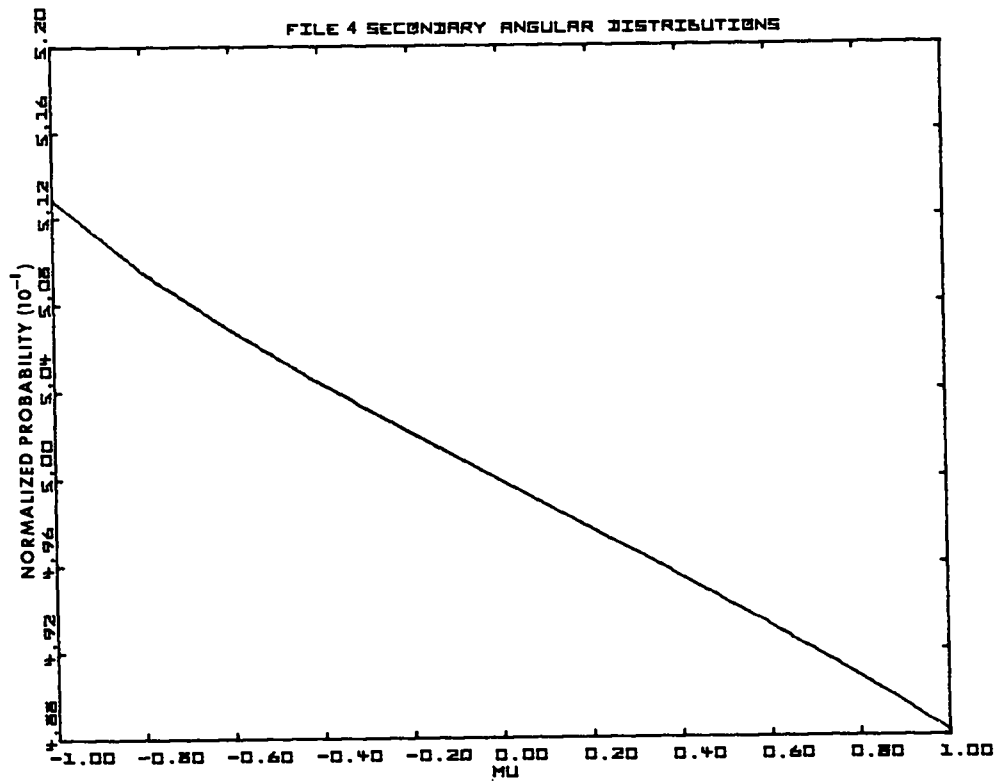
Fig. 10. Angular distribution for 8.0 MeV.

FILE 4 SECONDARY ANGULAR DISTRIBUTIONS
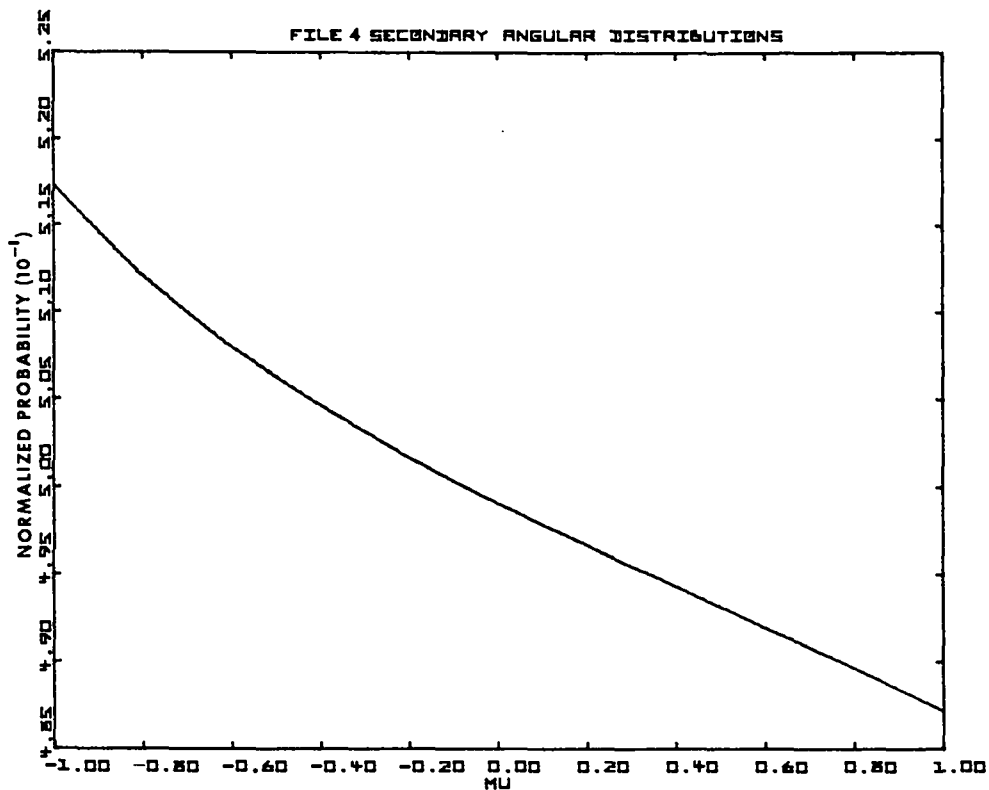
Fig. 11. Angular distribution for 10.0 MeV.

FILE 4 SECONDARY ANGULAR DISTRIBUTIONS
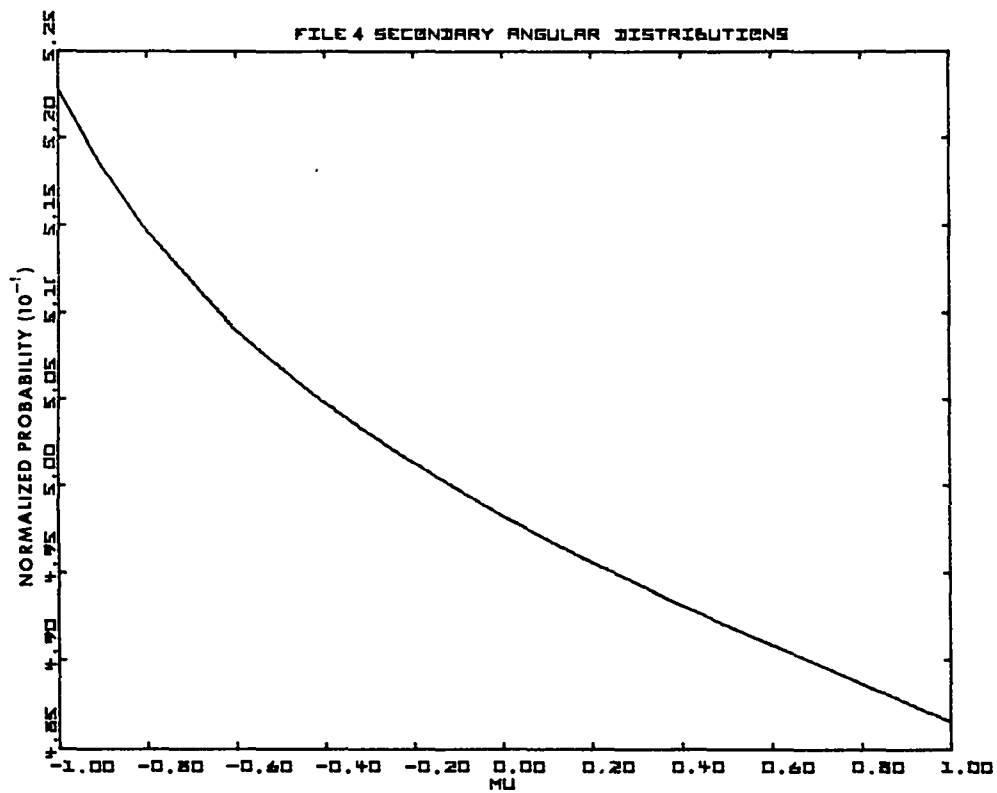
Fig. 12. Angular distribution for 12.0 MeV.

FILE 4 SECONDARY ANGULAR DISTRIBUTIONS
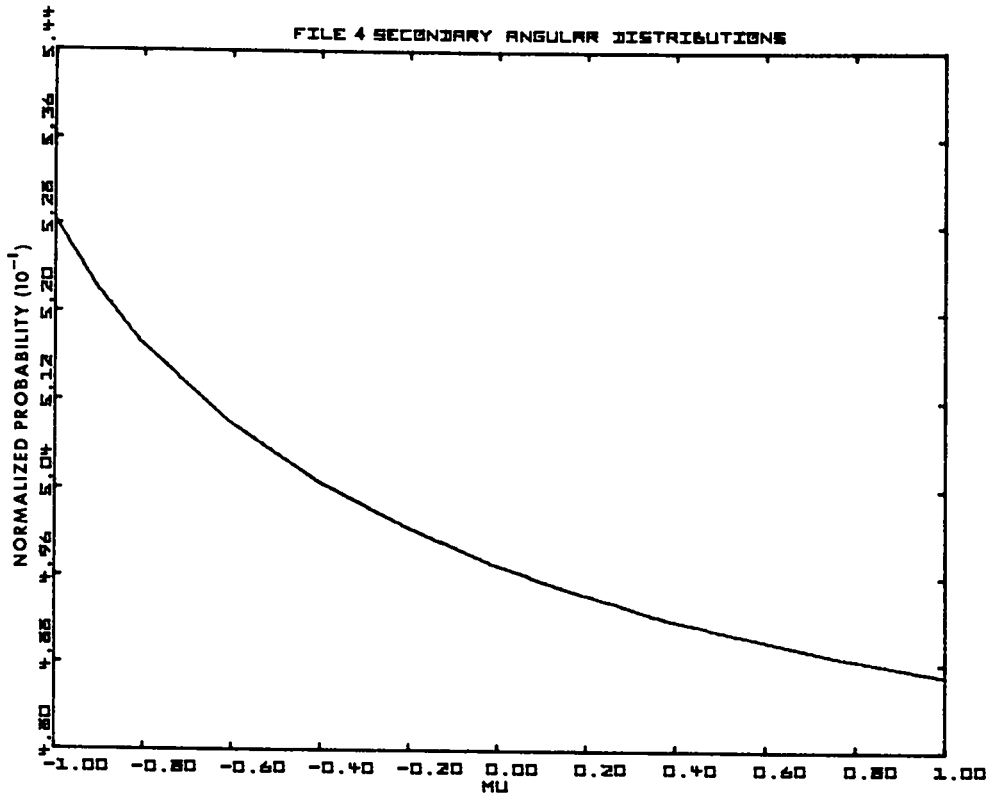
Fig. 13. Angular distribution for 14.0 MeV.

FILE 4 SECONDARY ANGULAR DISTRIBUTIONS
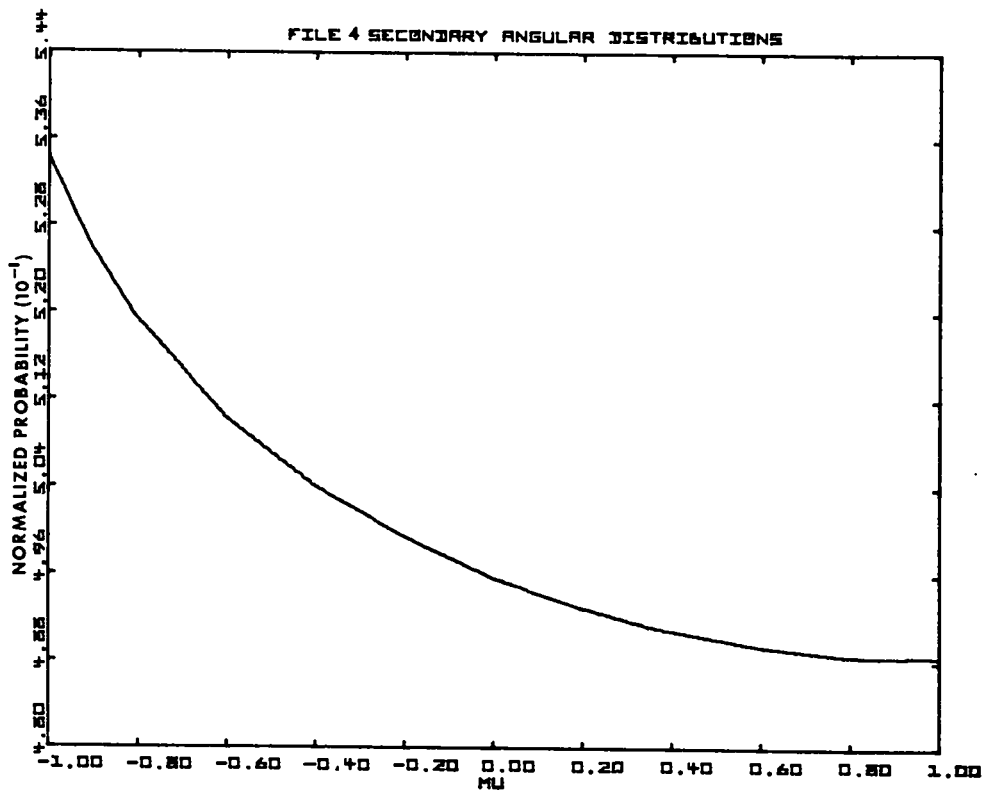
Fig. 14. Angular distribution for 16.0 MeV.

9

FILE 4 SECONDARY ANGULAR DISTRIBUTIONS
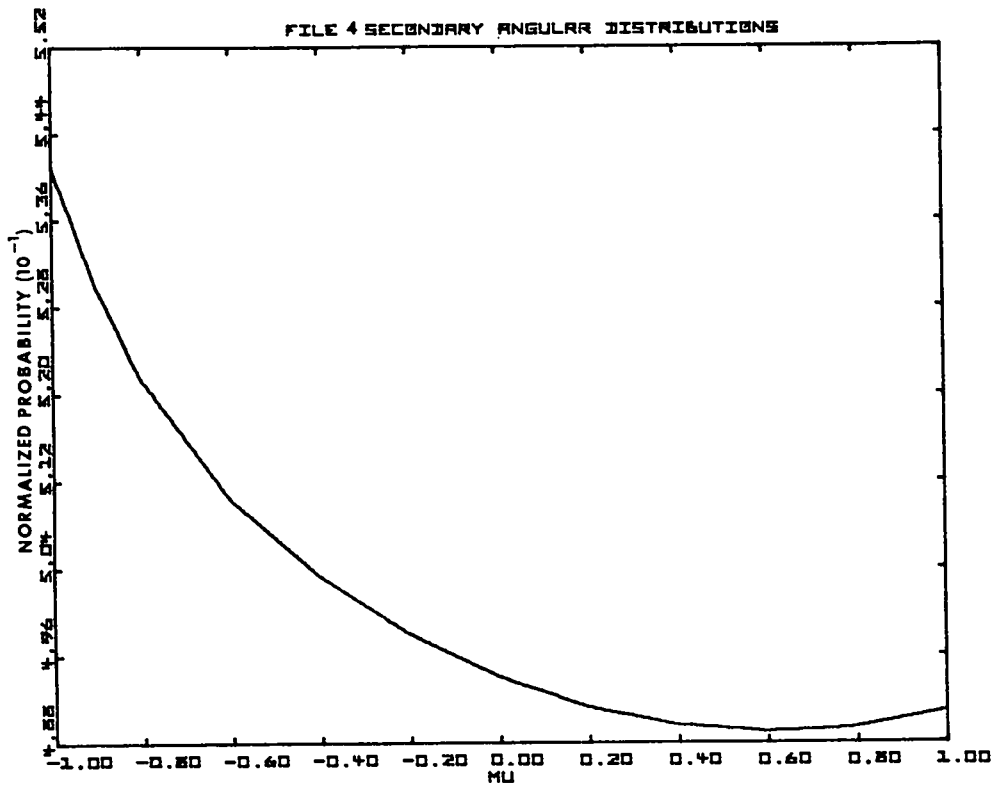
Fig. 15. Angular distribution for 18.0 MeV.

FILE 4 SECONDARY ANGULAR DISTRIBUTIONS
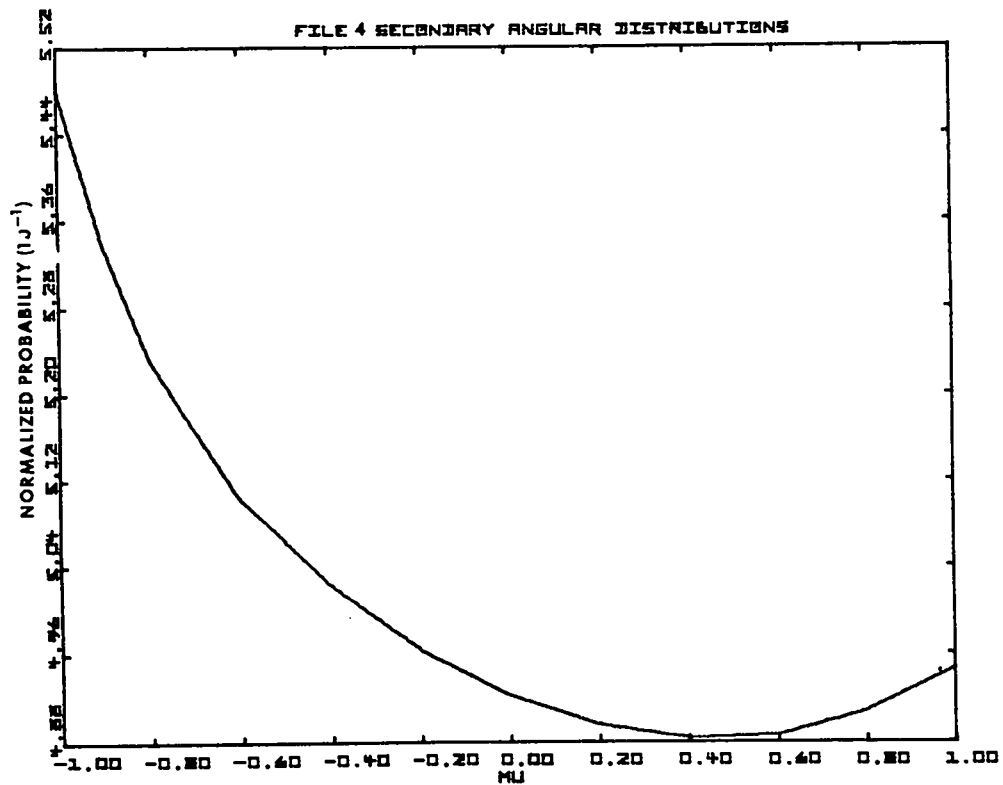
Fig. 16. Angular distribution for 20.0 MeV.

10

REFERENCES

1. J. C. Hopkins and G. Breit, "The H(n,n)H Scattering Observables Required for High Precision Fast-Neutron Measurements," submitted to Nuclear Data for publication; private communication prior to publication (1970).

2. A. Horsley, "Neutron Cross Sections of Hydrogen in the Energy Range 0.001 eV - 20 MeV," Nuclear Data A 2, 243 (1966) and private communication (1970).

3. "Chart of the Nuclides," Battelle Memorial Institute, May 1969.

4. R. E. Seamon, K. A. Friedman, G. Breit, R. D. Haracz, J. M. Holt, and A. Prakash, Phys. Rev. 165, 1579 (1968).

5. J. C. Davis and H. H. Barschall, "Adjustments in the n-p Singlet Effective Range," Phys. Letters 27B, 636 (1968).

6. J. C. Davis, BAPS 11 15, 474 (1970) and private communication (1970).

APPENDIX

LISTING OF HYDROGEN EVALUATION

```
      HYDROGEN IN ENDF/B-II FORMAT.   MAT = 1148            1148-0 -0     0
  1.001 E+03 9.9917E-01        0        0        0      121148 1451      1
0.0        0.0                 0        0       67       01148 1451      2
                                                           1148 1451     3
    HYDROGEN FREE ATOM CROSS SECTIONS                       1148 1451     4
       ENTRY BY L. STEWART, R.J. LABAUVE, AND P.G. YOUNG    1148 1451     5
       LOS ALAMOS SCIENTIFIC LABORATORY                     1148 1451     6
       LOS ALAMOS.NEW MEXICO 87544                          1148 1451     7
       OCTOBER 20.1970                                      1148 1451     8
                                                            1148 1451     9
    MF=1                                                    1148 1451    10
                                                            1148 1451    11
      MT=451. ATOMIC MASS=1.007825                          1148 1451    12
                                                            1148 1451    13
    MF=2                                                    1148 1451    14
                                                            1148 1451    15
      MT=151, SCATTERING LENGTH=1.2756E-12 CM.              1148 1451    16
                                                            1148 1451    17
    MF=3                                                    1148 1451    18
                                                            1148 1451    19
       MT=   1. TOTAL CROSS SECTIONS --- THE TOTAL CROSS SECTIONS ARE 1148 1451  20
                OBTAINED BY ADDING THE ELASTIC SCATTERING AND  1148 1451  21
                RADIATIVE CAPTURE CROSS SECTIONS AT ALL ENERGIES. 1148 1451  22
                   1.0E-05 EV TO 20 MEV.                    1148 1451    23
                                                            1148 1451    24
       MT=   2. ELASTIC SCATTERING --- FROM AN EXTENSIVE THEORETICAL 1148 1451  25
                TREATMENT OF FAST NEUTRON MEASUREMENTS      1148 1451    26
                BY J. C. HOPKINS(LASL) AND G. BREIT(STATE   1148 1451    27
                UNIVERSITY OF NEW YORK).                    1148 1451    28
                   1.0E-05 EV TO 20 MEV.                    1148 1451    29
                                                            1148 1451    30
      MT=102. RADIATIVE CAPTURE --- THESE CROSS SECTIONS ARE TAKEN 1148 1451  31
                FROM THE 1966 PUBLICATION OF A. HORSLEY WHERE A VALUE 1148 1451 32
                OF 332 MB WAS ADOPTED FOR THE THERMAL VALUE. 1148 1451   33
                   1.0E-05 EV TO 20 MEV.                    1148 1451    34
                                                            1148 1451    35
      MT=251, AVERAGE VALUE OF COSINE OF SCATTERING ANGLE   1148 1451    36
                IN LAB SYSTEM.                              1148 1451    37
                   1.0E-05 EV TO 20 MEV.                    1148 1451    38
                                                            1148 1451    39
      MT=252, AVERAGE LOGARITHMIC ENERGY CHANGE PER COLLISON, TAKEN 1148 1451 40
                AS 1, FROM 1.0E-05 EV TO 20 MEV.            1148 1451    41
                                                            1148 1451    42
      MT=253, GAMMA, TAKEN AS 1, FROM 1.0E-05 EV TO 20 MEV. 1148 1451    43
                                                            1148 1451    44
    MF=4                                                    1148 1451    45
                                                            1148 1451    46
       MT=   2, NEUTRON ELASTIC SCATTERING ANGULAR DISTRIBUTIONS IN 1148 1451  47
                THE CENTER OF MASS SYSTEM--GIVEN AS NORMALIZED 1148 1451  48
                POINTWISE PROBABILITIES.                    1148 1451    49
```

```
                                                                    1148  1451    50
                                                                    1148  1451    51
     MF=7                                                           1148  1451    52
                                                                    1148  1451    53
       MT=  4, .00001 TO 5 EV FREE GAS SIGMA=20.449 BARNS.         1148  1451    54
                                                                    1148  1451    55
     MF=12                                                          1148  1451    56
                                                                    1148  1451    57
       MT=102, GAMMA RAY MULTIPLICITIES --- MULTIPLICITY, (REFERRED 1148  1451    58
             TO MT=102, MF=3), IS UNITY AT ALL NEUTRON ENERGIES.    1148  1451    59
             SIXTEEN ENERGY BANDS ARE GIVEN FROM .2 MEV TO 20 MEV,  1148  1451    60
             AND THE AVERAGE GAMMA RAY ENERGY, EAG, IS DETERMINED   1148  1451    61
             FROM THE AVERAGE NEUTRON ENERGY, EAN, IN THE BAND BY   1148  1451    62
             EAG=2.225E+06+EAN/2., RECOIL ENERGY IGNORED.           1148  1451    63
                                                                    1148  1451    64
     MF=14                                                          1148  1451    65
                                                                    1148  1451    66
       MT=102, GAMMA RAY ANGULAR DISTRIBUTION --- ASSUMED ISOTROPIC 1148  1451    67


       HYDROGEN IN ENDF/B-II FORMAT.   MAT = 1148                   1148-0 -0     0
  1.001 E+03 9.9917E-01        0          0          0         121148  1451     1
 0.0        0.0               0          0         67          01148  1451     2
                                                                    1148  1451     3
     HYDROGEN FREE ATOM CROSS SECTIONS                              1148  1451     4
         ENTRY BY L. STEWART, R.J. LABAUVE, AND P.G. YOUNG          1148  1451     5
         LOS ALAMOS SCIENTIFIC LABORATORY                           1148  1451     6
         LOS ALAMOS,NEW MEXICO 87544                                1148  1451     7
         OCTOBER 20,1970                                            1148  1451     8
                                                                    1148  1451     9
     MF=1                                                           1148  1451    10
                                                                    1148  1451    11
       MT=451, ATOMIC MASS=1.007825                                 1148  1451    12
                                                                    1148  1451    13
     MF=2                                                           1148  1451    14
                                                                    1148  1451    15
       MT=151, SCATTERING LENGTH=1.2756E-12 CM.                     1148  1451    16
                                                                    1148  1451    17
     MF=3                                                           1148  1451    18
                                                                    1148  1451    19
       MT=  1, TOTAL CROSS SECTIONS --- THE TOTAL CROSS SECTIONS ARE 1148 1451    20
             OBTAINED BY ADDING THE ELASTIC SCATTERING AND          1148  1451    21
             RADIATIVE CAPTURE CROSS SECTIONS AT ALL ENERGIES.      1148  1451    22
               1.0E-05 EV TO 20 MEV.                                1148  1451    23
                                                                    1148  1451    24
       MT=  ', ELASTIC SCATTERING --- FROM AN EXTENSIVE THEORETICAL 1148  1451    25
             TREATMENT OF FAST NEUTRON MEASUREMENTS                 1148  1451    26
             BY J. C. HOPKINS(LASL) AND G. BREIT(STATE              1148  1451    27
             UNIVERSITY OF NEW YORK).                               1148  1451    28
               1.0E-05 EV TO 20 MEV.                                1148  1451    29
                                                                    1148  1451    30
       MT=102, RADIATIVE CAPTURE --- THESE CROSS SECTIONS ARE TAKEN 1148  1451    31
             FROM THE 1966 PUBLICATION OF A. HORSLEY WHERE A VALUE  1148  1451    32
             OF 332 MB WAS ADOPTED FOR THE THERMAL VALUE.           1148  1451    33
               1.0E-05 EV TO 20 MEV.                                1148  1451    34
                                                                    1148  1451    35
       MT=251, AVERAGE VALUE OF COSINE OF SCATTERING ANGLE          1148  1451    36
             IN LAB SYSTEM.                                         1148  1451    37
               1.0E-05 EV TO 20 MEV.                                1148  1451    38
                                                                    1148  1451    39
       MT=252, AVERAGE LOGARITHMIC ENERGY CHANGE PER COLLISON, TAKEN 1148 1451    40
             AS 1, FROM 1.0E-05 EV TO 20 MEV.                       1148  1451    41
                                                                    1148  1451    42
       MT=253, GAMMA, TAKEN AS 1, FROM 1.0E-05 EV TO 20 MEV.        1148  1451    43
                                                                    1148  1451    44
     MF=4                                                           1148  1451    45
                                                                    1148  1451    46
       MT=  2, NEUTRON ELASTIC SCATTERING ANGULAR DISTRIBUTIONS IN  1148  1451    47
             THE CENTER OF MASS SYSTEM--GIVEN AS NORMALIZED         1148  1451    48
             POINTWISE PROBABILITIES.                               1148  1451    49
```

MF=7

  MT= 4. .00001 TO 5 FV FREE GAS SIGMA=20.449 BARNS.

MF=12

  MT=102. GAMMA RAY MULTIPLICITIES --- MULTIPLICITY, (REFERRED
         TO MT=102. MF=3), IS UNITY AT ALL NEUTRON ENERGIES.
         SIXTEEN ENERGY BANDS ARE GIVEN FROM .2 MEV TO 20 MEV.
         AND THE AVERAGE GAMMA RAY ENERGY, EAG, IS DETERMINED
         FROM THE AVERAGE NEUTRON ENERGY, EAN. IN THE BAND BY
         EAG=2.225E+06+EAN/2., RECOIL ENERGY IGNORED.

MF=14

  MT=102. GAMMA RAY ANGULAR DISTRIBUTION --- ASSUMED ISOTROPIC
         AT ALL NEUTRON ENERGIES.

1148 1451 52
1148 1451 53
1148 1451 54
1148 1451 55
1148 1451 56
1148 1451 57
1148 1451 58
1148 1451 59
1148 1451 60
1148 1451 61
1148 1451 62
1148 1451 63
1148 1451 64
1148 1451 65
1148 1451 66
1148 1451 67
1148 1451 68
1148 1451 69

			1148 1451	
1	451	81	1148 1451	70
2	151	4	1148 1451	71
3	1	48	1148 1451	72
3	2	48	1148 1451	73
3	102	48	1148 1451	74
3	251	8	1148 1451	75
3	252	4	1148 1451	76
3	253	4	1148 1451	77
4	2	88	1148 1451	78
7	4	4	1148 1451	79
12	102	70	1148 1451	80
14	102	1	1148 1451	81
			1148 1 0	82
			1148 0 0	83

1.001 E+03	9.9917E-01	0	0	1	01148 2151	84
1.001 E+03	1.0000E+00	0	0	1	01148 2151	85
1.0 E-05	1.0 E+05	0	0	0	01148 2151	86
5.0 E-01	1.2756E+00	0	0	0	01148 2151	87
0.0	0.0	0	0	0	01148 2 0	88
0.0	0.0	0	0	0	01148 0 0	89
1.001 E+03	9.9917E-01	0	0	0	01148 3 1	90
0.0	0.0	0	0	1	1341148 3 1	91
134	5				1148 3 1	92

1.0000E-05	3.7148E+01	2.0000E-05	3.2257E+01	5.0000E-05	2.7917E+01	1148 3 1 93
1.0000E-04	2.5730E+01	2.0000E-04	2.4183E+01	5.0000E-04	2.2811E+01	1148 3 1 94
1.0000E-03	2.2119E+01	2.0000E-03	2.1630E+01	5.0000E-03	2.1196E+01	1148 3 1 95
1.0000E-02	2.0977E+01	2.5300E-02	2.0780E+01	1.0000E+02	2.0450E+01	1148 3 1 96
1.0000E+03	2.0330E+01	2.0000E+03	2.0200E+01	3.0000E+03	2.0070E+01	1148 3 1 97
4.0000E+03	1.9940E+01	5.0000E+03	1.9820E+01	6.0000E+03	1.9690E+01	1148 3 1 98
8.0000E+03	1.9450E+01	1.0000E+04	1.9210E+01	1.5000E+04	1.8650E+01	1148 3 1 99
2.0000E+04	1.8130E+01	2.5000E+04	1.7630E+01	3.0000E+04	1.7170E+01	1148 3 1 100
3.5000E+04	1.6740E+01	4.0000E+04	1.6330E+01	4.5000E+04	1.5940E+01	1148 3 1 101
5.0000E+04	1.5580E+01	5.5000E+04	1.5230E+01	6.0000E+04	1.4900E+01	1148 3 1 102
6.5000E+04	1.4590E+01	7.0000E+04	1.4290E+01	7.5000E+04	1.4010E+01	1148 3 1 103
8.0000E+04	1.3740E+01	8.5000E+04	1.3480E+01	9.0000E+04	1.3240E+01	1148 3 1 104
9.5000E+04	1.3000E+01	1.0000E+05	1.2770E+01	1.1000E+05	1.2350E+01	1148 3 1 105
1.2000E+05	1.1960E+01	1.3000E+05	1.1610E+01	1.4000E+05	1.1280E+01	1148 3 1 106
1.5000E+05	1.0970E+01	1.6000E+05	1.0670E+01	1.7000E+05	1.0400E+01	1148 3 1 107
1.8000E+05	1.0140E+01	1.9000E+05	9.8980E+00	2.0000E+05	9.6710E+00	1148 3 1 108
2.2000E+05	9.2580E+00	2.4000E+05	8.8920E+00	2.6000E+05	8.5620E+00	1148 3 1 109
2.8000E+05	8.2620E+00	3.0000E+05	7.9870E+00	3.2000E+05	7.7340E+00	1148 3 1 110
3.4000E+05	7.5010E+00	3.6000E+05	7.2840E+00	3.8000E+05	7.0830E+00	1148 3 1 111
4.0000E+05	6.8970E+00	4.2000E+05	6.7250E+00	4.4000E+05	6.5650E+00	1148 3 1 112
4.6000E+05	6.4150E+00	4.8000E+05	6.2750E+00	5.0000E+05	6.1430E+00	1148 3 1 113
5.5000E+05	5.8450E+00	6.0000E+05	5.5840E+00	6.5000E+05	5.3540E+00	1148 3 1 114
7.0000E+05	5.1480E+00	7.5000E+05	4.9640E+00	8.0000E+05	4.7970E+00	1148 3 1 115
8.5000E+05	4.6450E+00	9.0000E+05	4.5060E+00	9.5000E+05	4.3780E+00	1148 3 1 116
1.0000E+06	4.2610E+00	1.1000E+06	4.0510E+00	1.2000E+06	3.8680E+00	1148 3 1 117
1.3000E+06	3.7060E+00	1.4000E+06	3.5610E+00	1.5000E+06	3.4290E+00	1148 3 1 118
1.6000E+06	3.3090E+00	1.7000E+06	3.1980E+00	1.8000E+06	3.0970E+00	1148 3 1 119

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1.9000E+06 3.0030E+00 2.0000E+06 2.9150E+00 2.2000E+06 2.7590E+001148 3   1   120
2.4000E+06 2.6220E+00 2.6000E+06 2.5010E+00 2.8000E+06 2.3920E+001148 3   1   121
3.0000E+06 2.2930E+00 3.2000E+06 2.2030E+00 3.4000E+06 2.1200E+001148 3   1   122
3.6000E+06 2.0430E+00 3.8000E+06 1.9730F+00 4.0000E+06 1.9070E+001148 3   1   123
4.2000E+06 1.8450E+00 4.4000E+06 1.7880E+00 4.6000E+06 1.7340E+001148 3   1   124
4.8000E+06 1.6830E+00 5.0000E+06 1.6350E+00 5.2000E+06 1.5890E+001148 3   1   125
5.4000E+06 1.5470E+00 5.6000E+06 1.5060E+00 5.8000E+06 1.4670E+001148 3   1   126
6.0000E+06 1.4300E+00 6.2000E+06 1.3950E+00 6.4000E+06 1.3620E+001148 3   1   127
6.6000F+06 1.3290E+00 6.8000E+06 1.2990E+00 7.0000E+06 1.2690E+001148 3   1   128
7.5000E+06 1.2010E+00 8.0000E+06 1.1390F+00 8.5000E+06 1.0830E+001148 3   1   129
9.0000E+06 1.0320E+00 9.5000E+06 9.8590E-01 1.0000E+07 9.4320E-011148 3   1   130
1.0500F+07 9.0350E-01 1.1000E+07 8.6650E-01 1.1500E+07 8.3230F-011148 3   1   131
1.2000E+07 8.0050E-01 1.2500E+07 7.7100E-01 1.3000E+07 7.4330E-011148 3   1   132
1.3500E+07 7.1730E-01 1.4000E+07 6.9290E-01 1.4500E+07 6.6980E-011148 3   1   133
1.5000E+07 6.4800E-01 1.5500E+07 6.2740E-01 1.6000E+07 6.0780E-011148 3   1   134
1.6500E+07 5.8930E-01 1.7000E+07 5.7170E-01 1.7500E+07 5.5490E-011148 3   1   135
1.8000E+07 5.3900E-01 1.8500E+07 5.2380E-01 1.9000F+07 5.0930E-011148 3   1   136
1.9500E+07 4.9550E-01 2.0000E+07 4.8230F-01-0.          0.         1148 3   1   137
                                                                     1148 3   0   138
1.001 E+03 9.9917E-01          0          0          0          01148 3   2   139
0.         0.                  0          0          1   1341148 3   2   140
          134          5                                         1148 3   2   141
1.0000F-05 2.0449E+01 2.0000E-05 2.0449E+01 5.0000E-05 2.0449E+011148 3   2   142
1.0000F-04 2.0449E+01 2.0000E-04 2.0449E+01 5.0000E-04 2.0449E+011148 3   2   143
1.0000F-03 2.0449E+01 2.0000E-03 2.0449E+01 5.0000E-03 2.0449F+011148 3   2   144
1.0000E-02 2.0449E+01 2.5300E-02 2.0449E+01 1.0000E+02 2.0449E+011148 3   2   145
1.0000E+03 2.0329E+01 2.0000E+03 2.0198E+01 3.0000E+03 2.0068E+011148 3   2   146
4.0000E+03 1.9941E+01 5.0000E+03 1.9815E+01 6.0000E+03 1.9691E+011148 3   2   147
8.0000F+03 1.9448E+01 1.0000E+04 1.9213E+01 1.5000E+04 1.8651E+011148 3   2   148
2.0000E+04 1.8126E+01 2.5000E+04 1.7634E+01 3.0000E+04 1.7172E+011148 3   2   149
3.5000E+04 1.6737E+01 4.0000E+04 1.6327E+01 4.5000E+04 1.5941F+011148 3   2   150
5.0000E+04 1.5575E+01 5.5000E+04 1.5228E+01 6.0000F+04 1.4900E+011148 3   2   151
6.5000E+04 1.4587E+01 7.0000E+04 1.4291E+01 7.5000E+04 1.4008E+011148 3   2   152
8.0000E+04 1.3738E+01 8.5000E+04 1.3481E+01 9.0000E+04 1.3235E+011148 3   2   153
9.5000E+04 1.2999E+01 1.0000E+05 1.2774E+01 1.1000E+05 1.2351F+011148 3   2   154
1.2000E+05 1.1964E+01 1.3000E+05 1.1607E+01 1.4000E+05 1.1275F+011148 3   2   155
1.5000E+05 1.0965E+01 1.6000E+05 1.0673E+01 1.7000E+05 1.0398E+011148 3   2   156
1.8000E+05 1.0140E+01 1.9000E+05 9.8980E+00 2.0000E+05 9.6710F+001148 3   2   157
2.2000E+05 9.2580E+00 2.4000E+05 8.8920E+00 2.6000E+05 8.5620E+001148 3   2   158
2.8000E+05 8.2620E+00 3.0000E+05 7.9870E+00 3.2000E+05 7.7340E+001148 3   2   159
3.4000E+05 7.5010E+00 3.6000E+05 7.2840E+00 3.8000E+05 7.0830E+001148 3   2   160
4.0000E+05 6.8970E+00 4.2000E+05 6.7250F+00 4.4000E+05 6.5650E+001148 3   2   161
4.6000F+05 6.4150E+00 4.8000E+05 6.2750E+00 5.0000E+05 6.1430E+001148 3   2   162
5.5000F+05 5.8450E+00 6.0000E+05 5.5840E+00 6.5000F+05 5.3540E+001148 3   2   163
7.0000E+05 5.1480E+00 7.5000E+05 4.9640E+00 8.0000E+05 4.7970E+001148 3   2   164
8.5000E+05 4.6450F+00 9.0000E+05 4.5060E+00 9.5000E+05 4.3780E+001148 3   2   165
1.0000E+06 4.2610E+00 1.1000E+06 4.0510E+00 1.2000E+06 3.8680E+001148 3   2   166
1.3000E+06 3.7060E+00 1.4000E+06 3.5610E+00 1.5000E+06 3.4290E+001148 3   2   167
1.6000E+06 3.3090E+00 1.7000E+06 3.1980E+00 1.8000E+06 3.0970E+001148 3   2   168
1.9000E+06 3.0030E+00 2.0000E+06 2.9150E+00 2.2000E+06 2.7590E+001148 3   2   169
2.4000E+06 2.6220E+00 2.6000E+06 2.5010E+00 2.8000E+06 2.3920E+001148 3   2   170
3.0000E+06 2.2930E+00 3.2000E+06 2.2030E+00 3.4000E+06 2.1200E+001148 3   2   171
3.6000E+06 2.0430E+00 3.8000E+06 1.9730E+00 4.0000F+06 1.9070F+001148 3   2   172
4.2000E+06 1.8450E+00 4.4000E+06 1.7880E+00 4.6000E+06 1.7340E+001148 3   2   173
4.8000E+06 1.6830E+00 5.0000E+06 1.6350E+00 5.2000F+06 1.5890E+001148 3   2   174
5.4000E+06 1.5470E+00 5.6000E+06 1.5060E+00 5.8000E+06 1.4670E+001148 3   2   175
6.0000F+06 1.4300E+00 6.2000E+06 1.3950E+00 6.4000E+06 1.3620E+001148 3   2   176
6.6000F+06 1.3290E+00 6.8000E+06 1.2990E+00 7.0000E+06 1.2690E+001148 3   2   177
7.5000E+06 1.2010E+00 8.0000E+06 1.1390E+00 8.5000E+06 1.0830E+001148 3   2   178
9.0000E+06 1.0320E+00 9.5000E+06 9.8590E-01 1.0000E+07 9.4320E-011148 3   2   179
1.0500E+07 9.0350E-01 1.1000E+07 8.6650E-01 1.1500E+07 8.3230E-011148 3   2   180
1.2000E+07 8.0050E-01 1.2500E+07 7.7100E-01 1.3000E+07 7.4330E-011148 3   2   181
1.3500E+07 7.1730E-01 1.4000E+07 6.9290E-01 1.4500E+07 6.6980E-011148 3   2   182
1.5000E+07 6.4800E-01 1.5500E+07 6.2740E-01 1.6000E+07 6.0780E-011148 3   2   183
1.6500E+07 5.8930E-01 1.7000E+07 5.7170E-01 1.7500E+07 5.5490E-011148 3   2   184
1.8000E+07 5.3900E-01 1.8500E+07 5.2380E-01 1.9000E+07 5.0930F-011148 3   2   185
1.9500E+07 4.9550E-01 2.0000E+07 4.8230E-01-0.         -0.         1148 3   2   186
                                                                     1148 3   0   187
1.001 E+03 9.9917E-01          0          0          0          01148 3102   188
0.0        2.2247 E+06          0          0          1   1341148 3102   189
          134          5                                         1148 3102   190
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1.0000E-04 5.2808E+00 2.0000E-04 3.7341E+00 5.0000E-04 2.3616E+001148 3102  192
1.0000E-03 1.6699E+00 2.0000E-03 1.1808E+00 5.0000E-03 7.4682E-011148 3102  193
1.0000E-02 5.2808E-01 2.5300E-02 3.3200E-01 1.0000E+02 5.2770E-031148 3102  194
1.0000E+03 1.6590E-03 2.0000E+03 1.1926E-03 3.0000E+03 9.7008E-041148 3102  195
4.0000E+03 8.3290E-04 5.0000E+03 7.3747E-04 6.0000E+03 6.6619E-041148 3102  196
8.0000E+03 5.6518E-04 1.0000E+04 4.9580E-04 1.5000E+04 3.8782E-041148 3102  197
2.0000E+04 3.2386E-04 2.5000E+04 2.8064E-04 3.0000E+04 2.4909E-041148 3102  198
3.5000E+04 2.2248E-04 4.0000E+04 2.0553E-04 4.5000E+04 1.8970E-041148 3102  199
5.0000E+04 1.7646E-04 5.5000E+04 1.6518E-04 6.0000E+04 1.5544E-041148 3102  200
6.5000E+04 1.4693E-04 7.0000E+04 1.3942E-04 7.5000E+04 1.3273E-041148 3102  201
8.0000E+04 1.2673E-04 8.5000E+04 1.2132E-04 9.0000E+04 1.1640E-041148 3102  202
9.5000E+04 1.1191E-04 1.0000E+05 1.0780E-04 1.1000E+05 1.0019E-041148 3102  203
1.2000E+05 9.3717E-05 1.3000E+05 8.8131E-05 1.4000E+05 8.3256E-051148 3102  204
1.5000E+05 7.8960E-05 1.6000E+05 7.5142E-05 1.7000E+05 7.1725E-051148 3102  205
1.8000E+05 6.8645E-05 1.9000E+05 6.5853E-05 2.0000E+05 6.3310E-051148 3102  206
2.2000E+05 5.9051E-05 2.4000E+05 5.5591E-05 2.6000E+05 5.2731E-051148 3102  207
2.8000E+05 5.0330E-05 3.0000E+05 4.8290E-05 3.2000E+05 4.6538E-051148 3102  208
3.4000E+05 4.5018E-05 3.6000E+05 4.3691E-05 3.8000E+05 4.2523E-051148 3102  209
4.0000E+05 4.1490E-05 4.2000E+05 4.0607E-05 4.4000E+05 3.9828E-051148 3102  210
4.6000E+05 3.9138E-05 4.8000E+05 3.8525E-05 5.0000E+05 3.7980E-051148 3102  211
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7.0000E+05 3.5520E-05 7.5000E+05 3.5167E-05 8.0000E+05 3.4840E-051148 3102  213
8.5000E+05 3.4742E-05 9.0000E+05 3.4650E-05 9.5000E+05 3.4552E-051148 3102  214
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1.3000E+06 3.4490E-05 1.4000E+06 3.4360E-05 1.5000E+06 3.4340E-051148 3102  216
1.6000E+06 3.4310E-05 1.7000E+06 3.4290E-05 1.8000E+06 3.4270E-051148 3102  217
1.9000E+06 3.4250E-05 2.0000E+06 3.4230E-05 2.2000E+06 3.4520E-051148 3102  218
2.4000E+06 3.4810E-05 2.6000E+06 3.5100E-05 2.8000E+06 3.5390E-051148 3102  219
3.0000E+06 3.5680E-05 3.2000E+06 3.5800E-05 3.4000E+06 3.5910E-051148 3102  220
3.6000E+06 3.6030E-05 3.8000E+06 3.6140E-05 4.0000E+06 3.6260E-051148 3102  221
4.2000E+06 3.6290E-05 4.4000E+06 3.6320E-05 4.6000E+06 3.6360E-051148 3102  222
4.8000E+06 3.6390E-05 5.0000E+06 3.6420E-05 5.2000E+06 3.6290E-051148 3102  223
5.4000E+06 3.6160E-05 5.6000E+06 3.6040E-05 5.8000E+06 3.5910E-051148 3102  224
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7.5000E+06 3.4590E-05 8.0000E+06 3.3940E-05 8.5000E+06 3.3640E-051148 3102  227
9.0000E+06 3.3330E-05 9.5000E+06 3.2960E-05 1.0000E+07 3.2590E-051148 3102  228
1.0500E+07 3.2210E-05 1.1000E+07 3.1820E-05 1.1500E+07 3.1450E-051148 3102  229
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1.3500E+07 3.0010E-05 1.4000E+07 2.9830E-05 1.4500E+07 2.9400E-051148 3102  231
1.5000E+07 2.8960E-05 1.5500E+07 2.8630E-05 1.6000E+07 2.8300E-051148 3102  232
1.6500E+07 2.7880E-05 1.7000E+07 2.7450E-05 1.7500E+07 2.7360E-051148 3102  233
1.8000E+07 2.7260E-05 1.8500E+07 2.6730E-05 1.9000E+07 2.6200E-051148 3102  234
1.9500E+07 2.6120E-05 2.0000E+07 2.6040E-05-0.         -0.         1148 3102  235
                                                        1148 3  0  236
1.001 E+03 9.9917E-01             0          0          0          01148 3251  237
0.0        0.0                    0          0          1         141148 3251  238
           14           3                                1148 3251  239
1.0  E-056.65213E-01 1.0  E+056.65213E-01 5.0  E+056.64899E-011148 3251  240
1.0  E+066.64620E-01 2.0  E+066.64149E-01 4.0  E+066.63355E-011148 3251  241
6.0  E+066.62628E-01 8.0  E+066.62018E-01 1.0  E+076.61338E-011148 3251  242
1.2  E+076.61045E-01 1.4  E+076.60449E-01 1.6  E+076.59929E-011148 3251  243
1.8  E+076.59540E-01 2.0  E+076.59196E-01                 1148 3251  244
                                                        1148 3  0  245
1.001 E+03 9.9917E-01             0          0          0          01148 3252  246
0.0        0.0                    0          0          1          21148 3252  247
            2            2                               1148 3252  248
1.0  E-05 1.0         2.0  E+07 1.0                       1148 3252  249
                                                        1148 3  0  250
1.001 E+03 9.9917E-01             0          0          0          01148 3253  251
0.0        0.0                    0          0          1          21148 3253  252
            2            2                               1148 3253  253
1.0  E-05 1.0         2.0  E+07 1.0                       1148 3253  254
                                                        1148 3  0  255
                                                        1148 0  0  256
1.001 E+03 9.9917E-01             0          2          0          01148 4  2  257
0.0        0.0                    0          2          0          01148 4  2  258
           0.0         0.0        0          0          1         141148 4  2  259
           14           2                                1148 4  2  260
```

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    0.0      1.0-05         0         0         1       111148 4  2  261
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   -.4       .5         -.2        .5        0.       .51148 4  2  264
    .2       .5          .4        .5         .6      .51148 4  2  265
    .8       .5         1.0        .5                  1148 4  2  266
    0.0      1.0+05         0         0         1       111148 4  2  267
   11        2                                           1148 4  2  268
   -1.0      .5         -.8        .5        -.6      .51148 4  2  269
   -.4       .5         -.2        .5        0.       .51148 4  2  270
    .2       .5          .4        .5         .6      .51148 4  2  271
    .8       .5         1.0        .5                  1148 4  2  272
    0.0      5.0+05         0         0         1       111148 4  2  273
   11        2                                           1148 4  2  274
-.10000E+01 .50117E+00-.80000E+00 .50097E+00-.60000E+00 .50066E+001148 4  2  275
-.40000E+00 .50045E+00-.20000E+00 .50025E+000.          .50005E+001148 4  2  276
 .20000E+00 .49974E+00 .40000E+00 .49953E+00 .60000E+00 .49933E+001148 4  2  277
 .80000E+00 .49902E+00 .10000E+01 .49882E+00             1148 4  2  278
    0.0      1.0+06         0         0         1       111148 4  2  279
   11        2                                           1148 4  2  280
-.10000E+01 .50218E+00-.80000E+00 .50176E+00-.60000E+00 .50131E+001148 4  2  281
-.40000E+00 .50089E+00-.20000E+00 .50044E+000.          .50000E+001148 4  2  282
 .20000E+00 .49957E+00 .40000E+00 .49913E+00 .60000E+00 .49869E+001148 4  2  283
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    0.0      2.0+06         0         0         1       111148 4  2  285
   11        2                                           1148 4  2  286
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-.40000E+00 .50158E+00-.20000E+00 .50081E+000.          .50003E+001148 4  2  288
 .20000E+00 .49925E+00 .40000E+00 .49846E+00 .60000E+00 .49764E+001148 4  2  289
 .80000E+00 .49682E+00 .10000E+01 .49598E+00             1148 4  2  290
    0.0      4.0+06         0         0         1       111148 4  2  291
   11        2                                           1148 4  2  292
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-.40000E+00 .50275E+00-.20000E+00 .50143E+000.          .50011E+001148 4  2  294
 .20000E+00 .49873E+00 .40000E+00 .49734E+00 .60000E+00 .49589E+001148 4  2  295
 .80000E+00 .49441E+00 .10000E+01 .49283E+00             1148 4  2  296
    0.0      6.0+06         0         0         1       111148 4  2  297
   11        2                                           1148 4  2  298
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-.40000E+00 .50362E+00-.20000E+00 .50177E+000.          .49993E+001148 4  2  300
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    0.0      8.0+06         0         0         1       111148 4  2  303
   11        2                                           1148 4  2  304
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 .20000E+00 .49766E+00 .40000E+00 .49546E+00 .60000E+00 .49314E+001148 4  2  307
 .80000E+00 .49077E+00 .10000E+01 .48818E+00             1148 4  2  308
    0.0     10.0+06         0         0         1       111148 4  2  309
   11        2                                           1148 4  2  310
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-.40000E+00 .50461E+00-.20000E+00 .50168E+000.          .49908E+001148 4  2  312
 .20000E+00 .49669E+00 .40000E+00 .49435E+00 .60000E+00 .49202E+001149 4  2  313
 .80000E+00 .48969E+00 .10000E+01 .48716E+00             1148 4  2  314
    0.0     12.0+06         0         0         1       121148 4  2  315
   12        2                                           1148 4  2  316
-.10000E+01 .52272E+00-.90000E+00 .51825E+00-.80000E+00 .51464E+001148 4  2  317
-.60000E+00 .50898E+00-.40000E+00 .50475E+00-.20000E+00 .50129E+001148 4  2  319
0.          .49823E+00 .20000E+00 .49556E+00 .40000E+00 .49313E+001148 4  2  319
 .60000E+00 .49085E+00 .80000E+00 .48866E+00 .10000E+01 .48654E+001148 4  2  320
    0.0     14.0+06         0         0         1       121148 4  2  321
   12        2                                           1148 4  2  322
-.10000E+01 .52823E+00-.90000E+00 .52188E+00-.80000E+00 .51698E+001148 4  2  323
-.60000E+00 .50982E+00-.40000E+00 .50456E+00-.20000E+00 .50048E+001148 4  2  324
0.          .49703E+00 .20000E+00 .49431E+00 .40000E+00 .49195E+001148 4  2  325
 .60000E+00 .49005E+00 .80000E+00 .48833E+00 .10000E+01 .48688E+001148 4  2  326
    0.0     16.0+06         0         0         1       121148 4  2  327
   12        2                                           1148 4  2  328
-.10000E+01 .53433E+00-.90000E+00 .52575E+00-.80000E+00 .51924E+001148 4  2  329
-.60000E+00 .51024E+00-.40000E+00 .50404E+00-.20000E+00 .49939E+001148 4  2  330
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0.           .49567F+00 .20000E+00 .49288F+00 .40000E+00 .49081E+001148 4  2  331
.60000F+00   .48936E+00 .80000E+00 .48853E+00 .10000E+01 .48833F+001148 4  2  332
      0.0    18.0+06         0          0          1         121148 4  2  333
     12              2                                        1148 4  2  334
-.10000E+01  .54092E+00-.90000E+00 .52962E+00-.80000E+00 .52134E+001148 4  2  335
-.60000F+00  .51038F+00-.40000E+00 .50327E+00-.20000E+00 .49802E+001148 4  2  336
0.           .49406E+00 .70000E+00 .49126E+00 .40000F+00 .48963E+001148 4  2  337
.60000F+00   .48905E+00 .80000E+00 .48940E+00 .10000E+01 .49091E+001148 4  2  338
      0.0    20.0+06         0          0          1         121148 4  2  339
     12              2                                        1148 4  2  340
-.10000E+01  .54807E+00-.90000E+00 .53348E+00-.80000F+00 .52332E+001148 4  2  341
-.60000E+00  .51029F+00-.40000E+00 .50221F+00-.20000E+00 .49635E+001148 4  2  342
0.           .49218E+00 .70000E+00 .48958F+00 .40000E+00 .48840E+001148 4  2  343
.60000E+00   .48866F+00 .80000E+00 .49075E+00 .10000E+01 .49466E+001148 4  2  344
                                                             1148 4  0  345
                                                             1148 0  0  346
1.001 E+03   9.9917E-01         0          0          0         01148 7  4  347
0.0          0.0               0          0         12         11148 7  4  348
0.0          2.0   E+02 9.9917E-01 5.0         0.0        0.0    1148 7  4  349
1.0          2.0449E+01 9.9917E-01 0.0         0.0        0.0    1148 7  4  350
                                                             1148 7  0  351
                                                             1148 0  0  352
1.0010E+03   9.9917E-01         1          0         17       0114812102  353
0.           0.                0          0          1       2114812102  354
      ?              2                                        114812102  355
1.0000E-05   1.0000E+00 2.0000E+07 1.0000E+00                 114812102  356
1.1725E+07   0.                0          2          1       3114812102  357
      3              2                                        114812102  358
1.8000E+07   0.         1.8001E+07 1.0000E+00 2.0000E+07 1.0000E+00114812102  359
1.0725E+07   0.                0          2          1       4114812102  360
      4              2                                        114812102  361
1.6000E+07   0.         1.6001E+07 1.0000E+00 1.8000E+07 1.0000E+00114812102  362
1.8001F+07   0.                                               114812102  363
9.7250F+06   0.                0          2          1       4114812102  364
      4              2                                        114812102  365
1.4000E+07   0.         1.4001E+07 1.0000E+00 1.6000E+07 1.0000F+00114812102  366
1.6001F+07   0.                                               114812102  367
8.7250F+06   0.                0          2          1       4114812102  368
      4              2                                        114812102  369
1.2000E+07   0.         1.2001E+07 1.0000F+00 1.4000F+07 1.0000E+00114812102  370
1.4001F+07   0.                                               114812102  371
7.7250F+06   0.                0          2          1       4114812102  372
      4              2                                        114812102  373
1.0000E+07   0.         1.0001E+07 1.0000E+00 1.2000E+07 1.0000E+00114812102  374
1.2001F+07   0.                                               114812102  375
6.9750E+06   0.                0          2          1       4114812102  376
      4              2                                        114812102  377
9.0000E+06   0.         9.0001E+06 1.0000E+00 1.0000E+07 1.0000E+00114812102  378
1.0001E+07   0.                                               114812102  379
6.4750E+06   0.                0          2          1       4114812102  380
      4              2                                        114812102  381
8.0000E+06   0.         8.0001E+06 1.0000E+00 9.0000E+06 1.0000E+00114812102  382
9.0001E+06   0.                                               114812102  383
5.9750E+06   0.                0          2          1       4114812102  384
      4              2                                        114812102  385
7.0000F+06   0.         7.0001E+06 1.0000E+00 8.0000E+06 1.0000E+00114812102  386
8.0001F+06   0.                                               114812102  387
5.4750E+06   0.                0          2          1       4114812102  388
      4              2                                        114812102  389
6.0000E+06   0.         6.0001E+06 1.0000E+00 7.0000E+06 1.0000E+00114812102  390
7.0001E+06   0.                                               114812102  391
4.9750E+06   0.                0          2          1       4114812102  392
      4              2                                        114812102  393
5.0000E+06   0.         5.0001E+06 1.0000F+00 6.0000E+06 1.0000E+00114812102  394
6.0001E+06   0.                                               114812102  395
4.4750E+06   0.                0          2          1       4114812102  396
      4              2                                        114812102  397
4.0000E+06   0.         4.0001E+06 1.0000E+00 5.0000E+06 1.0000F+00114812102  398
5.0001E+06   0.                                               114812102  399
3.9750E+06   0.                0          2          1       4114812102  400
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        4            2                                      114812102   401
3.0000E+06 0.           3.0001E+06 1.0000E+00 4.0000E+06 1.0000E+00114812102   402
4.0001E+06 0.                                              114812102   403
3.4750E+06 0.                    0          2          1        4114812102   404
        4            2                                      114812102   405
2.0000E+06 0.           2.0001E+06 1.0000E+00 3.0000F+06 1.0000E+00114812102   406
3.0001E+06 0.                                              114812102   407
2.9750E+06 0.                    0          2          1        4114812102   408
        4            2                                      114812102   409
1.0000E+06 0.           1.0001E+06 1.0000E+00 2.0000F+06 1.0000E+00114812102   410
2.0001E+06 0.                                              114812102   411
2.6250E+06 0.                    0          2          1        4114812102   412
        4            2                                      114812102   413
6.0000E+05 0.           6.0001E+05 1.0000E+00 1.0000E+06 1.0000F+00114812102   414
1.0001E+06 0.                                              114812102   415
2.4250E+06 0.                    0          2          1        4114812102   416
        4            2                                      114812102   417
2.0000E+05 0.           2.0001E+05 1.0000E+00 6.0000E+05 1.0000E+00114812102   418
6.0001E+05 0.                                              114812102   419
2.2250E+06 0.                    0          2          1        3114812102   420
        3            2                                      114812102   421
1.0000E-05 1.0000E+00 2.0000E+05 1.0000E+00 2.0001E+05 0.         114812102   422
                                                          114812   0   423
                                                          1148  0   0   424
1.0010F+03 9.9917E-01            1          0          0  0114814102   425
                                                          114814   0   426
                                                          1148  0   0   427
                                                               -1     428
```