JAERI-M

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25-GROUP CONSTANTS OF TRITIUM

March 1976

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JAERI - M 6494

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(Received February 20, 1976)

The group constants of tritium have been prepared using the same group structure as in the ABBN set which is useful for neutronic survey analysis. Anisotropy of the elastic scattering in the energy range of 0.1 ∿ 20 MeV is taken into consideration by means of Legendre polynomial expansion up to the fifth term. Elastic removal cross sections are given in matrix form $\sigma_e(i\rightarrow j)$, together with the corresponding $\mu_e(i\rightarrow j)$ values.

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JAERI－M 6494

トリチウムの25群群定数

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（1976年2月20日受理）

トリチウムの群定数を作成した。群構造は炉のサーベイ計算によく利用されるABBNセットと同じにしてある。エネルギー領域0.1～20MeVにおける弾性散乱の非等方性は，ルヂャンドル展開を第5項までとり入れることによって考慮した。弾性散乱による中性子除去断面積はσe（i→j）とμe（i→j）をマトリクス形で与えている。

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1. Introduction

This report presents the results of a calculation of ABBN[1] type 25 group constants on neutron-induced reaction cross sections for tritium.

Up to the present, several experimental cross section data for tritium or helium-3[2-8] have been reported. However, there are not the data which can cover the wide energy range. Stewart[9] have reported the compilation of experimental and theoretical data, and recommended "best fits" to the data.

The differential cross sections of elastic scattering have been calculated by Legendre polynomial expansion up to P_5 order. For these calculations, we have computed the first five coefficients of this expansion, which are based on Stewart's recommended data. And then the fitting curve for the expansion coefficients are drawn.

This analysis was performed primarily to determine the elastic group transfer matrix for use in the 25 group constants.

The empirical formula for elastic scattering cross sections above neutron energy of 0.2 MeV have been recommended.

2. Differential Cross Sections for Elastic Scattering

It is assumed that the angular dependence of the elastic scattering cross section $\sigma(E_0,\mu)$ in the center-of-mass system is represented in the form

$$\sigma(E_0,\mu) = \frac{\sigma_s(E_0)}{2\pi} \sum_{\ell=0}^{5} \frac{(2\ell+1)}{2} B_\ell(E_0) P_\ell(\mu) \qquad (1)$$

where $\sigma_s(E_0) = \int_{-1}^{1} \sigma(E_0,\mu)\,d\mu$,

μ : cosine of the elastic scattering angle in the center-of-mass system,

$P_\ell(\mu)$: ℓ-th Legendre polynomial,

$B_\ell(E_0)$: expansion coefficient ($B_0(E_0) = 1$).

The expansion coefficients are then given by

$$B_\ell(E_0) = \frac{2\pi}{\sigma_s(E_0)} \int_{-1}^{1} \sigma(E_0,\mu) P_\ell(\mu)\,d\mu \qquad (1)\text{-}1$$

And $B_1(E_0)$ represents average cosine of scattering angle in the center-of mass system.

For these calculations it is necessary to define the expansion coefficients. The B_ℓ's were obtained by quadrature method, where data are based on Ref. 9. The number of energy points used in calculating are 12 points (0.5, 1.0, 2.0, 3.5, 6.0, 8.5, 9.5, 9.75, 10.4, 11.5, 14.1 and 19.4 MeV, respectively).

The Legendre expansion coefficients determined from these data were plotted versus energy and smooth curves were drawn through the data.

We have recorded in Fig. (1)-(5) the valves of $B_\ell(E_0)$ obtained from the calculations and our smooth curves drawn through these points. There is obviously some doubt as to the "goodness" of the curves drawn because of the scatter in the available data.

From these smooth curves for the expansion coefficients, B_1-B_5 data were read and tabulated in Table I.

Some of calculated differential cross sections are presented graphically in Fig. (6) - Fig. (13) in comparison with the experimental data. For the more comparison of this calculation with experimental data, some p-He^3 elastic scattering data were utilized.

These charge-conjugate p-He^3 scattering data are sometimes used to evaluate n-T scattering data by other evaluators.

3. Slowing Down Due to Elastic Scattering

The energy change in scattering is related to a cosine of the scattering angle in the center-of-mass system and the ratio of the neutron energy after scattering to that before scattering is given as

$$\frac{E}{E_0} = \frac{A^2 + 2A\cos\theta + 1}{(A+1)^2} \qquad (2)$$

where
- θ : scattering angle in the center-of-mass system,
- A : mass number of target nucleus,
- E_0 : incident neutron energy,
- E : scattered neutron energy.

If Ψ is the elastic scattering angle in the laboratory system,

$$\cos\Psi = \frac{A\cos\theta + 1}{\sqrt{A^2 + 2A\cos\theta + 1}} . \qquad (3)$$

With decreasing energy, the value of cos Ψ tended to the value it would have in the case of isotropy in the center-of-mass system, it is founded that

$$\cos \Psi = \frac{2}{3A} \quad . \tag{4}$$

We have determined the group average values of μ_e (i, i+k), which is an average value of cosine of elastic scattering angle at which a transfer occurs from the i-th group to the (i+k)-th group, by simple averaging process.

4. Calculation of 25 Group Constants

Using 1/E neutron spectrum as a weighting spectrum, group average cross section are calculated as

$$\sigma_x = \frac{\int \sigma_x(E)\phi(E)dE}{\int \phi(E)dE} \tag{5}$$

where x : reaction type

$\phi(E) = 1/E$.

And using the calculated differential cross sections, the group transfer cross sections of ABBN type due to elastic scattering are calculated. Below 8.5 MeV, the total and elastic cross sections are identical and above 8.5 MeV the total cross sections are obtained with elastic scattering cross sections by adding of the non-elastic cross sections (where it is used (n,2n) cross section only). These (n,2n) data are read from the Stewart's recommended curve and however, this curve was obtained mostly by guesswork.

The group averaging value of the mean angle cosine in elastic scattering cross sections.

About μ_e data (which are group values of the average cosine of the elastic scattering angle in the laboratory system), they are approximated with 2/3A from 9 group to 25 group.

5. Empirical Formula for Elastic Scattering

To obtain empirical formula for elastic scattering, least square fitting method to the experimental data have been carried out using a computer code "LSQKKD".(10) As the result, the following formula is recommended:

$$\sigma_e(E) = 1.13555 + (0.72775)E - (0.14092)E^2 + (0.00875)E^3 - (0.00018)E^4 \quad . \qquad (6)$$

In order to obtain better prediction, it is good to use the next formula in the energy range from 2 MeV to 5 MeV:

$$\sigma_e(E) = 1.21844 + (0.6278)E - (0.08283)E^2 \ , \qquad (7)$$
$$\text{for } 2 \text{ MeV} < E < 5 \text{ MeV}.$$

The cross section curve calculated by above formula are compared with experimental data and presented graphically in Fig. (14).

6. Conclusion

Some of comparisons of calculated data with experimental data are showed a good agreement. And then predicted Legendre expansion coefficients and the calculated differential cross sections are expected to be utilizable.

The calculated ABBN type 25 group constants for tritium are given in Table II-1 and Table II-2. In the near future it will be expected to adjust these data by experimental analysis.

The empirical formula will be a useful one for fine group calculations. This formula can predict the elastic scattering cross sections reported by experiments within the uncertainties of 5%.

It is recognized, of course, that the calculated set of group constants are not the best one. However, it is hoped that it represents a useful step in the processing of group constants for tritium.

For useful convenience, some of the calculated differential cross sections in the energy range from 0.1 to 20 MeV are given in Table III.

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Table I. Legendre polynomial expansion coefficients for the angular distribution of elastically scattered neutrons for tritium and elastic scattering cross sections.

ENERGY (Mev)	B_0	B_1	B_2	B_3	B_4	B_5	σ_s (BARNS)
.10	1.000	-.105	.020	-.001	.001	-.001	1.3000
.12	1.000	-.106	.020	-.001	.001	-.001	1.3000
.14	1.000	-.108	.021	-.001	.002	-.001	1.3000
.16	1.000	-.110	.022	-.002	.002	-.002	1.3050
.18	1.000	-.112	.023	-.002	.002	-.002	1.3100
.20	1.000	-.115	.024	-.002	.002	-.002	1.3150
.22	1.000	-.118	.025	-.002	.003	-.003	1.3200
.24	1.000	-.121	.027	-.002	.003	-.003	1.3240
.26	1.000	-.124	.029	-.003	.003	-.004	1.3280
.28	1.000	-.127	.031	-.003	.003	-.004	1.3320
.30	1.000	-.130	.033	-.003	.004	-.004	1.3500
.32	1.000	-.134	.034	-.003	.004	-.004	1.3600
.34	1.000	-.138	.036	-.003	.004	-.005	1.3700
.36	1.000	-.142	.038	-.004	.004	-.005	1.3800
.38	1.000	-.146	.040	-.004	.004	-.005	1.3900
.40	1.000	-.150	.042	-.004	.004	-.006	1.4000
.45	1.000	-.162	.046	-.005	.005	-.007	1.4300
.50	1.000	-.175	.050	-.005	.005	-.007	1.4500
.55	1.000	-.190	.053	-.006	.006	-.008	1.4800
.60	1.000	-.210	.057	-.006	.007	-.008	1.5100
.65	1.000	-.222	.060	-.007	.008	-.009	1.5300
.70	1.000	-.240	.065	-.007	.009	-.010	1.5600
.75	1.000	-.262	.068	-.008	.010	-.010	1.5800
.80	1.000	-.280	.070	-.008	.011	-.011	1.6100
.90	1.000	-.305	.077	-.009	.013	-.012	1.6500
1.00	1.000	-.318	.082	-.010	.015	-.013	1.7000
1.10	1.000	-.320	.092	-.012	.017	-.013	1.7400
1.20	1.000	-.318	.100	-.014	.019	-.014	1.7700
1.30	1.000	-.316	.110	-.016	.020	-.014	1.8200
1.40	1.000	-.310	.120	-.018	.022	-.015	1.8500
1.60	1.000	-.295	.132	-.021	.024	-.015	1.9500
1.80	1.000	-.280	.150	-.024	.026	-.015	2.0400
2.00	1.000	-.240	.165	-.025	.028	-.015	2.1200
2.20	1.000	-.200	.180	-.025	.029	-.014	2.1600
2.40	1.000	-.160	.190	-.025	.030	-.013	2.2600
2.50	1.000	-.120	.192	-.025	.030	-.012	2.2950
2.80	1.000	-.080	.200	-.024	.031	-.011	2.3600
3.00	1.000	-.040	.205	-.024	.032	-.010	2.4000

Table I (continued)

ENERGY (Mev)	B_0	B_1	B_2	B_3	B_4	B_5	σ_s (BARNS)
3.20	1.000	0.000	.210	-.023	.032	-.009	2.4200
3.40	1.000	.040	.212	-.022	.032	-.008	2.4300
3.50	1.000	.050	.214	-.022	.032	-.007	2.4400
3.60	1.000	.070	.215	-.021	.033	-.007	2.4400
3.80	1.000	.090	.217	-.021	.033	-.006	2.4300
4.00	1.000	.120	.218	-.020	.033	-.005	2.4100
4.20	1.000	.140	.219	-.019	.033	-.004	2.3800
4.40	1.000	.160	.220	-.018	.033	-.003	2.3500
4.60	1.000	.170	.220	-.017	.034	-.003	2.3200
4.80	1.000	.190	.220	-.017	.034	-.002	2.2800
5.00	1.000	.200	.220	-.016	.034	-.001	2.2400
5.20	1.000	.220	.220	-.016	.034	-.001	2.2000
5.40	1.000	.230	.220	-.016	.034	-.001	2.1600
5.60	1.000	.240	.220	-.015	.034	0.000	2.1100
5.80	1.000	.250	.220	-.015	.034	.001	2.0700
6.00	1.000	.260	.220	-.015	.034	.001	2.0300
6.20	1.000	.270	.220	-.015	.034	.002	1.9850
6.50	1.000	.280	.220	-.014	.034	.002	1.9250
7.00	1.000	.300	.222	-.014	.033	.003	1.8150
7.50	1.000	.320	.223	-.014	.033	.004	1.7050
8.00	1.000	.330	.224	-.015	.032	.004	1.6150
8.50	1.000	.342	.225	-.015	.032	.005	1.5345
9.00	1.000	.355	.226	-.015	.031	.006	1.4545
9.50	1.000	.360	.230	-.015	.030	.006	1.3775
9.75	1.000	.365	.232	-.016	.030	.006	1.3310
10.00	1.000	.370	.234	-.016	.030	.007	1.2880
10.40	1.000	.380	.236	-.016	.029	.007	1.2220
11.00	1.000	.390	.240	-.016	.028	.007	1.1285
11.50	1.000	.395	.245	-.017	.028	.008	1.0610
12.00	1.000	.400	.250	-.017	.027	.008	1.0060
13.00	1.000	.410	.255	-.018	.025	.008	.9160
14.00	1.000	.420	.280	-.019	.023	.009	.8500
15.00	1.000	.425	.258	-.019	.022	.009	.7905
16.00	1.000	.430	.255	-.020	.020	.009	.7490
17.00	1.000	.435	.250	-.021	.018	.010	.7140
18.00	1.000	.440	.243	-.021	.016	.010	.6780
19.00	1.000	.441	.235	-.022	.014	.010	.6500
19.40	1.000	.443	.232	-.022	.013	.010	.6390
20.00	1.000	.445	.230	-.023	.012	.010	.6240

Table 2-1 Group constants for tritium

Group	Energy Range	σ_x	σ_e	σ_{in}	σ_e	μ_e	$\sigma_s(e)$
1	6.5 ∿ 10.5MeV	1.588	0.0	0.011	1.577	0.575	0.846
2	4.0 ∿ 6.5	2.214	↑	0.000	2.214	0.482	1.254
3	2.5 ∿ 4.0	2.396		↑	2.396	0.323	1.557
4	1.4 ∿ 2.5	2.068			2.068	0.108	1.584
5	0.8 ∿ 1.4	1.718			1.718	0.023	1.454
6	0.4 ∿ 0.8	1.488			1.343	0.121	1.119
7	0.2 ∿ 0.4	1.343			1.343	0.198	0.955
8	0.1 ∿ 0.2	1.301			1.301	0.218	0.931
9	46.5 ∿ 100 KeV	1.300			1.300	0.222	0.930
10	21.5 ∿ 46.5	1.300			1.300	0.222	0.930
11	10.5 ∿ 21.5	1.300			1.300	0.222	0.930
12	4.65 ∿ 10.0	1.300			1.300	0.222	0.930
13	2.15 ∿ 4.65	1.300			1.300	0.222	0.930
14	1.0 ∿ 2.15	1.300			1.300	0.222	0.930
15	465 ∿ 1000 eV	1.300			1.300	0.222	0.930
16	215 ∿ 465	1.300			1.300	0.222	0.930
17	100 ∿ 215	1.300			1.300	0.222	0.930
18	46.5 ∿ 100	1.300			1.300	0.222	0.930
19	21.5 ∿ 46.5	1.300			1.300	0.222	0.930
20	10.0 ∿ 21.5	1.300			1.300	0.222	0.930
21	4.65 ∿ 10.0	1.300			1.300	0.222	0.930
22	2.15 ∿ 4.65	1.300			1.300	0.222	0.930
23	1.0 ∿ 2.15	1.300			1.300	0.222	0.930
24	0.465 ∿ 1.0	1.300	↓	↓	1.300	0.222	0.930
25	0.215 ∿ 0.465	1.300	0.0	0.000	1.300	0.222	

Table 2-2 Elastic scattering transfer matrix for tritium

i \ K	$\sigma_e(i,i+k)$ at k equal to			
	0	1	2	3
1	0.731	0.546	0.158	0.142
2	0.960	0.637	0.430	0.187
3	0.839	0.714	0.713	0.130
4	0.484	0.670	0.887	0.027
5	0.264	0.842	0.612	——
6	0.369	0.760	0.359	
7	0.388	0.677	0.278	
8	0.370	0.702	0.229	
9	0.370	0.702	0.228	
10	0.370	0.702	0.228	
11	0.370	0.702	0.228	
12	0.370	0.702	0.228	
13	0.370	0.702	0.228	
14	0.370	0.702	0.228	
15	0.370	0.702	0.228	
16	0.370	0.702	0.228	
17	0.370	0.702	0.228	
18	0.370	0.702	0.228	
19	0.370	0.702	0.228	
20	0.370	0.702	0.228	
21	0.370	0.702	0.228	
22	0.370	0.702	0.228	
23	0.370	0.702	0.228	
24	0.370	0.930	——	
25	1.300	——	——	

i \ K	$\mu_e(i,i+k)$ at k equal to			
	0	1	2	3
1	0.872	0.422	-0.404	-0.680
2	0.869	0.396	-0.437	-0.403
3	0.863	0.282	-0.594	-0.179
4	0.823	0.172	-0.622	0.189
5	0.791	0.096	-0.700	——
6	0.736	0.026	-0.561	
7	0.747	0.041	-0.598	
8	0.757	0.025	-0.474	
9	0.757	0.025	-0.474	
10	0.757	0.025	-0.474	
11	0.757	0.025	-0.474	
12	0.757	0.025	-0.474	
13	0.757	0.025	-0.474	
14	0.757	0.025	-0.474	
15	0.757	0.025	-0.474	
16	0.757	0.025	-0.474	
17	0.757	0.025	-0.474	
18	0.757	0.025	-0.474	
19	0.757	0.025	-0.474	
20	0.757	0.025	-0.474	
21	0.757	0.025	-0.474	
22	0.757	0.025	-0.474	
23	0.757	0.025	-0.474	
24	0.757	-0.097	——	
25	0.146	——	——	

Table 3 Calculated angular distributions of neutrons elastically scattered from tritium (MB/ST)

Cosine	Neutron energy (MeV)										
θ	0.1	0.5	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0
1.0	80.2	75.9	51.1	171.5	365.7	489.4	513.9	499.5	468.2	428.8	397.5
0.9	81.4	81.0	58.9	154.9	307.4	402.9	416.7	404.2	378.1	347.0	320.8
0.8	82.3	82.2	60.2	134.4	255.7	331.9	340.4	330.5	309.1	284.5	262.9
0.7	83.2	81.6	59.3	114.7	212.2	274.7	281.2	273.7	256.4	236.6	219.0
0.6	84.3	80.8	58.9	98.9	177.3	229.6	235.5	229.9	215.7	199.5	194.9
0.5	87.6	80.9	60.9	88.7	151.3	194.5	200.0	195.6	183.6	169.8	157.7
0.4	87.6	82.4	66.1	84.5	133.1	167.5	172.1	168.1	157.4	145.2	134.8
0.3	89.8	85.5	74.5	86.2	121.6	146.9	149.7	145.1	135.1	123.9	114.6
0.2	92.4	90.1	86.0	92.7	115.5	131.1	131.0	125.3	115.2	104.7	96.0
0.1	95.3	96.1	99.5	102.8	113.3	118.6	114.8	107.4	97.1	86.9	78.7
0.0	98.6	102.9	114.4	115.0	113.7	108.6	100.6	91.2	80.3	70.4	62.4
-0.1	102.1	110.2	129.5	128.3	115.9	100.6	88.3	76.6	65.2	55.4	47.7
-0.2	105.7	117.6	144.2	141.9	119.6	94.9	78.2	64.3	52.4	42.8	35.2
-0.3	109.6	124.9	158.1	155.7	125.4	92.2	71.6	55.3	42.9	33.3	26.0
-0.4	113.6	132.1	171.4	170.8	134.6	94.4	70.0	51.4	38.3	28.5	21.3
-0.5	117.9	139.6	185.1	189.3	149.9	103.8	75.9	54.4	40.3	29.7	22.4
-0.6	122.6	147.9	201.1	214.9	175.3	124.2	92.1	67.0	50.9	38.8	30.6
-0.7	127.7	158.4	222.2	253.0	216.5	160.0	122.4	92.1	72.4	57.4	47.3
-0.8	133.6	172.6	252.8	311.2	280.7	217.3	170.9	133.0	107.2	87.6	73.7
-0.9	140.6	193.1	298.5	399.1	377.3	303.2	242.8	193.5	157.8	131.2	111.0
-1.0	149.1	222.9	366.8	529.2	517.7	426.1	343.8	277.8	227.0	190.0	160.0

Table 3 Calculated angular distributions of neutrons elastically scattered from tritium (MB/ST)(continued)

Cosine	Neutron energy (MeV)										
θ	10	11	12	13	14	15	16	17	18	19	20
1.0	360.2	322.1	293.1	269.1	252.5	234.5	220.7	203.4	196.5	185.1	175.8
0.9	290.6	261.0	237.3	218.8	205.6	191.4	181.1	172.2	162.5	154.1	147.2
0.8	238.1	214.5	194.8	180.2	169.6	158.3	150.5	145.7	136.2	130.0	124.8
0.7	198.2	178.7	162.0	150.1	141.4	132.3	126.3	123.0	115.3	110.6	106.8
0.6	167.1	150.4	136.1	126.0	118.8	111.2	106.5	103.3	98.0	94.5	91.5
0.5	142.1	127.3	114.7	105.9	99.7	93.4	89.6	86.0	83.1	80.4	78.1
0.4	120.8	107.5	96.3	88.5	83.0	77.8	74.6	70.8	69.6	67.6	65.7
0.3	101.9	89.8	79.8	72.7	67.8	63.6	60.9	57.2	57.0	55.5	54.0
0.2	84.5	73.5	64.5	58.2	53.8	50.3	48.1	45.0	45.2	44.1	42.9
0.1	68.1	58.4	50.3	44.8	40.7	38.1	36.3	34.2	34.2	33.4	32.5
0.0	52.9	44.4	37.3	32.5	28.9	27.0	25.6	24.7	24.0	23.7	23.1
-0.1	39.2	31.9	25.8	21.8	18.6	17.3	16.3	16.7	15.4	15.4	14.9
-0.2	27.7	21.6	16.4	13.3	10.5	9.7	9.1	10.3	8.6	8.8	8.5
-0.3	19.4	14.3	10.0	7.5	5.2	4.7	4.3	5.9	4.1	4.4	4.3
-0.4	15.4	10.9	7.3	5.2	3.3	2.9	2.6	3.8	2.4	2.7	2.6
-0.5	16.8	12.2	9.0	7.1	5.4	4.8	4.3	4.4	3.9	4.0	3.8
-0.6	24.8	19.2	16.1	13.7	12.0	10.8	10.0	8.5	8.7	8.4	7.9
-0.7	40.3	32.8	29.0	25.7	23.5	21.3	19.7	16.4	16.9	15.9	14.9
-0.8	64.2	53.6	48.2	43.3	40.0	36.3	33.5	28.9	28.3	26.3	24.4
-0.9	97.3	82.0	73.9	66.6	61.2	55.5	51.1	46.7	42.3	38.9	35.9
-1.0	139.9	118.2	105.9	95.3	86.6	78.4	71.8	70.6	58.0	52.8	48.3

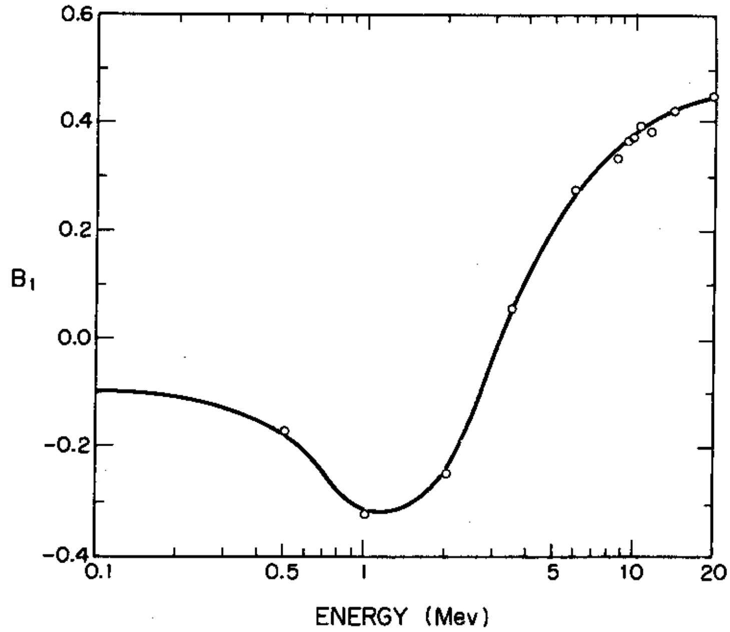

Fig. 1 Energy variation of Legendre polynomial expansion coefficient B_1 for elastic scattering cross section of tirtium.

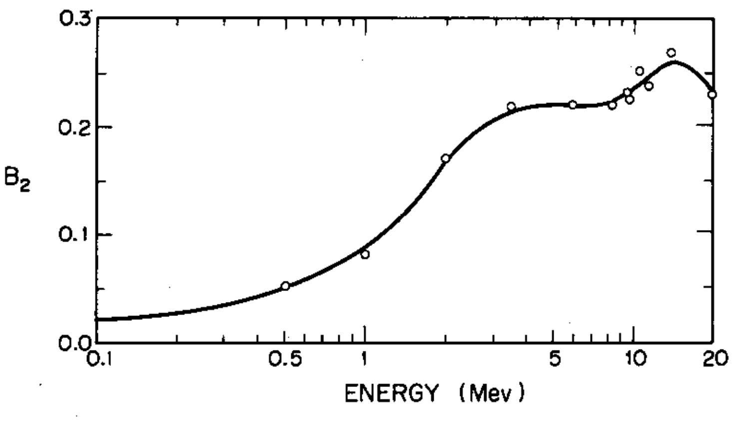

Fig. 2 Energy variation of Legendre polynomial expansion coefficient B_2 for elastic scattering cross section of tritium.

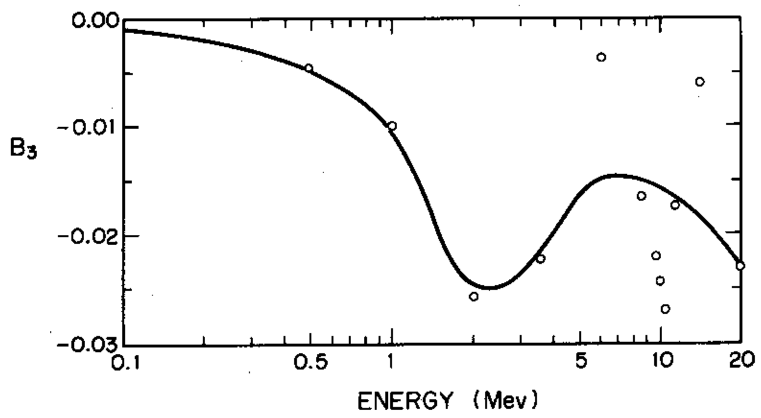

Fig. 3 Energy variation of Legendre polynomial expansion coefficient B_3 for elastic scattering cross section of tritium.

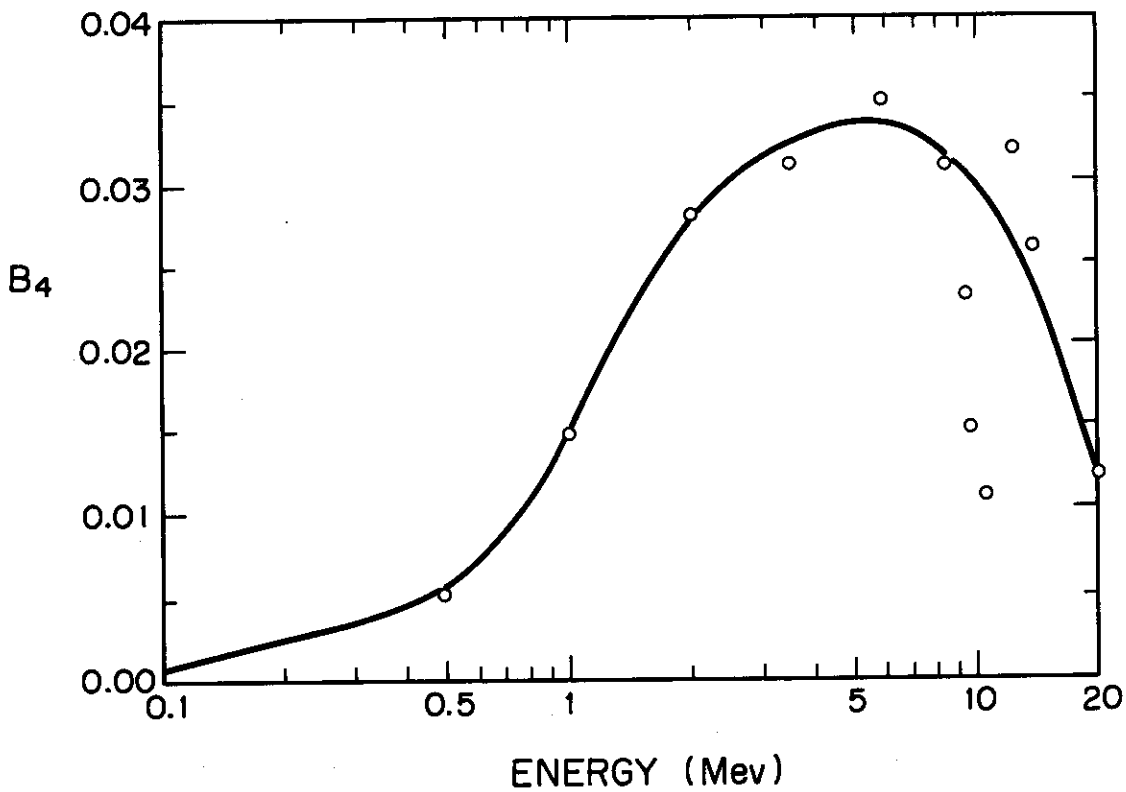

Fig. 4 Energy variation of Legendre polynomial expansion coefficient B_4 for elastic scattering cross section of tritium.

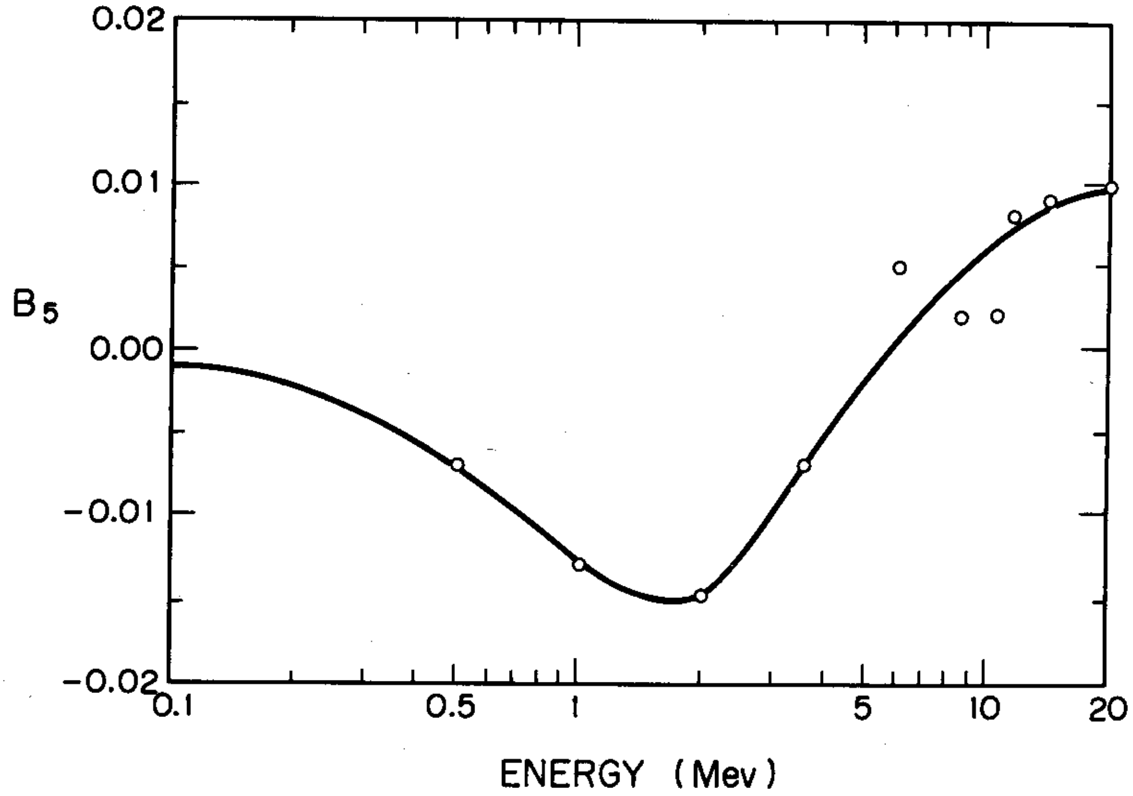

Fig. 5. Energy variation of Legendre polynomial expansion coefficient B_5 for ealstic scattering cross section of tritium.

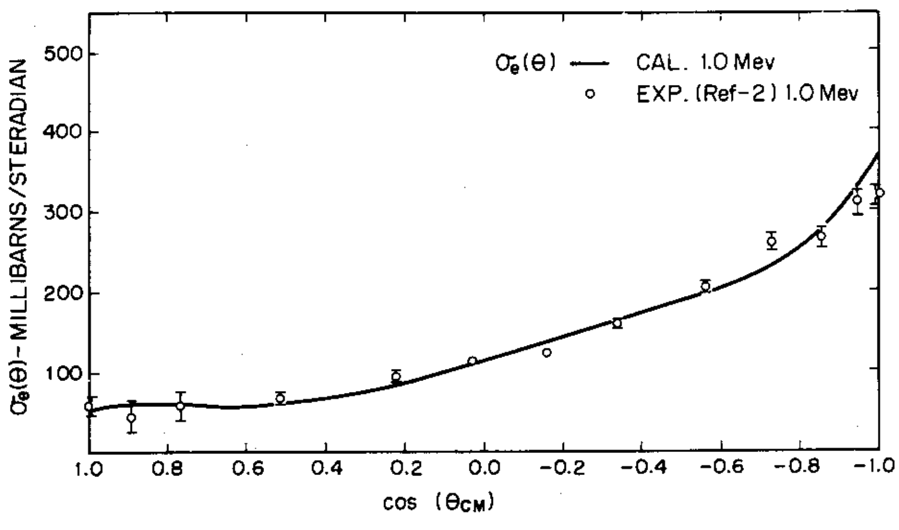

Fig. 6 Comparison of the calculated elastic angular distribution in n-T reaction with the experimental data at 1 MeV of incident neutron energy.

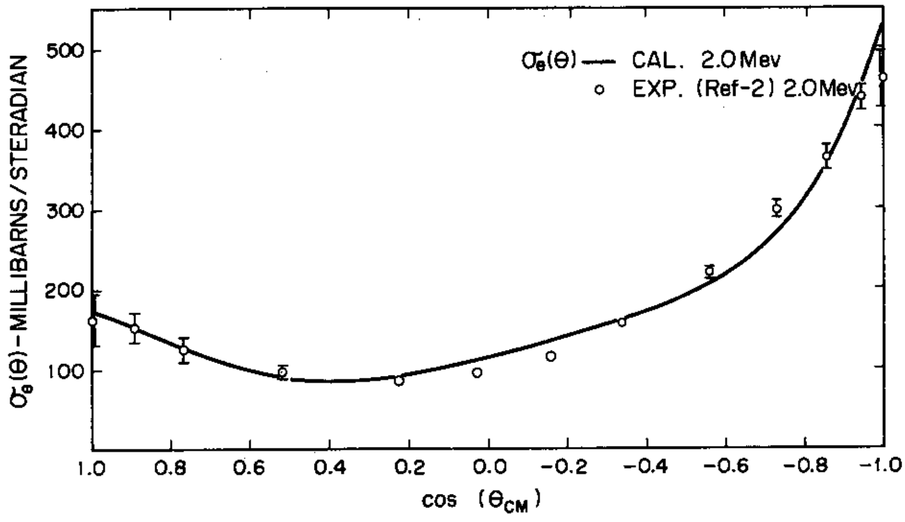

Fig. 7 Comparison of the calculated elastic angular distribution in n-T reaction with the experimental data at 2 MeV incident neutron energy.

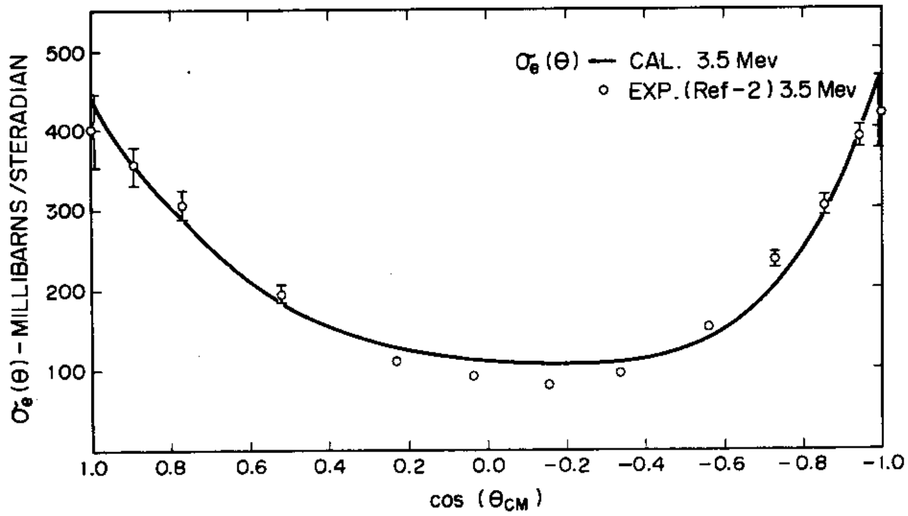

Fig. 8 Comparison of the calculated elastic angular distribution in n-T reaction with the experimental data at 3.5 MeV incident neutron energy.

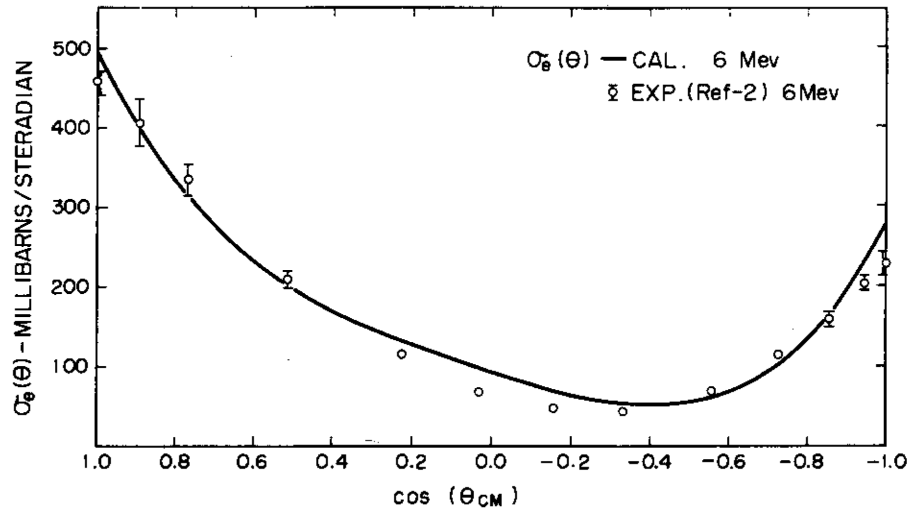

Fig. 9 Comparison of the calculated elastic angular distribution in n-T reaction with the experimental data at 5 MeV incident neutron energy.

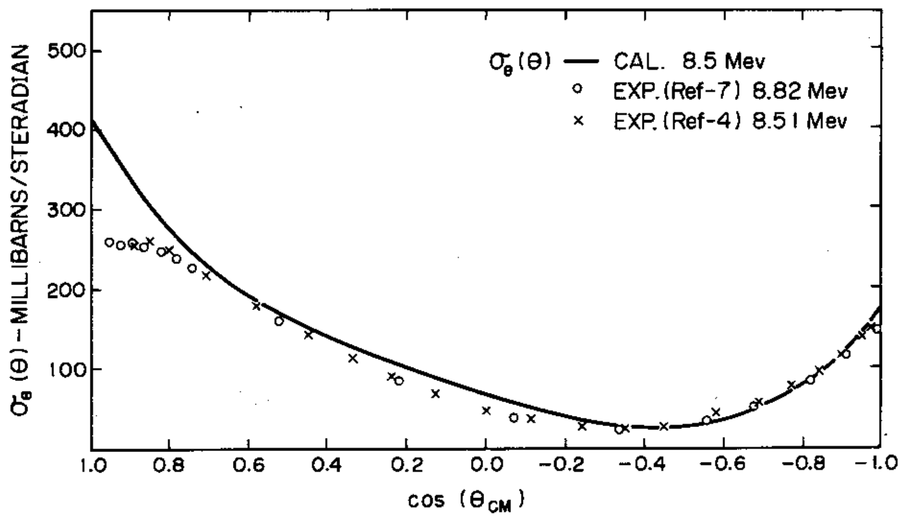

Fig.10 Comparison of the calculated elastic angular distribution in n-T reaction with the experimental data in P-He^3 reaction about 8.5 MeV of incident proton energy.

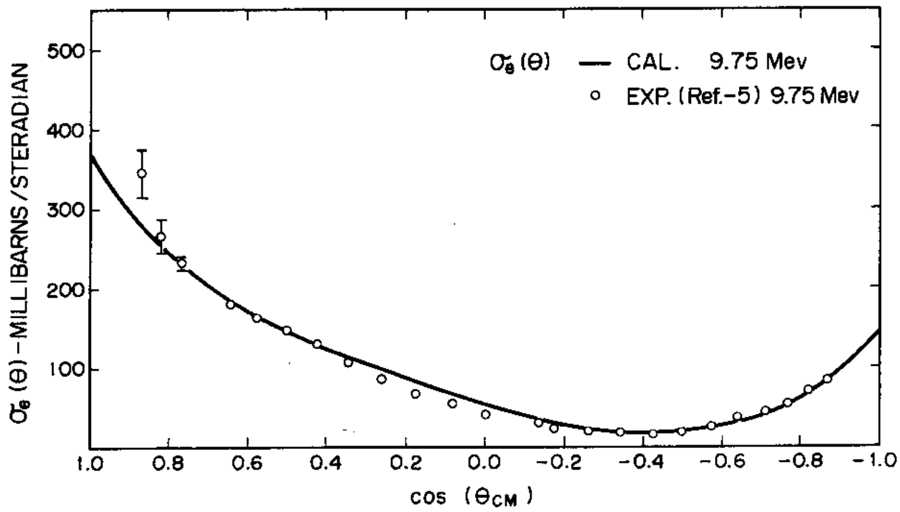

Fig.11 Comparison of the calculated elastic angular distribution in n-T reaction with the experimental data in P-He^3 reaction at 9.75 MeV of incident proton energy.

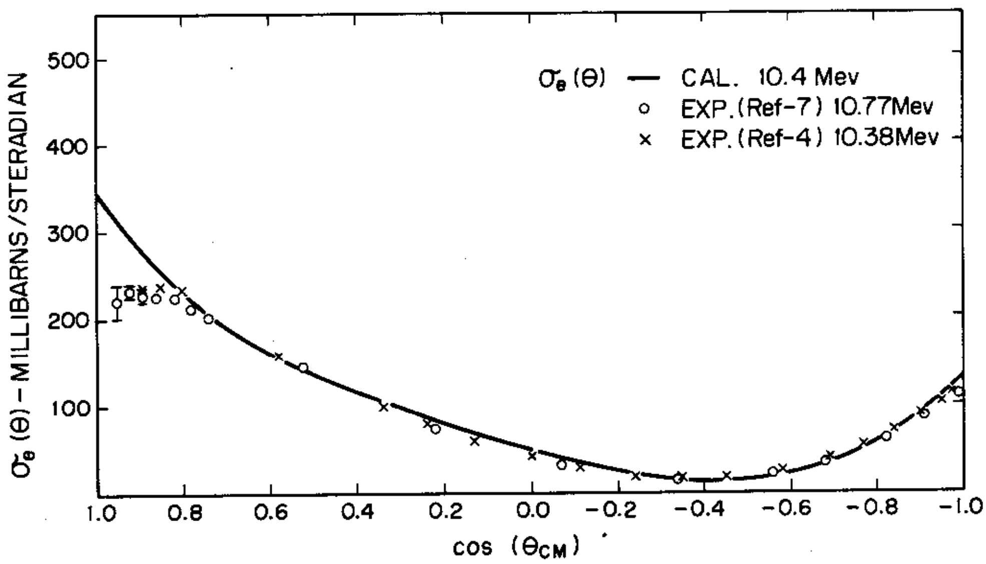

Fig.12 Comparison of the calculated elastic angular distribution in n-T reaction with the experimental data in P-He^3 reaction about 10.4 MeV of incident proton energy.

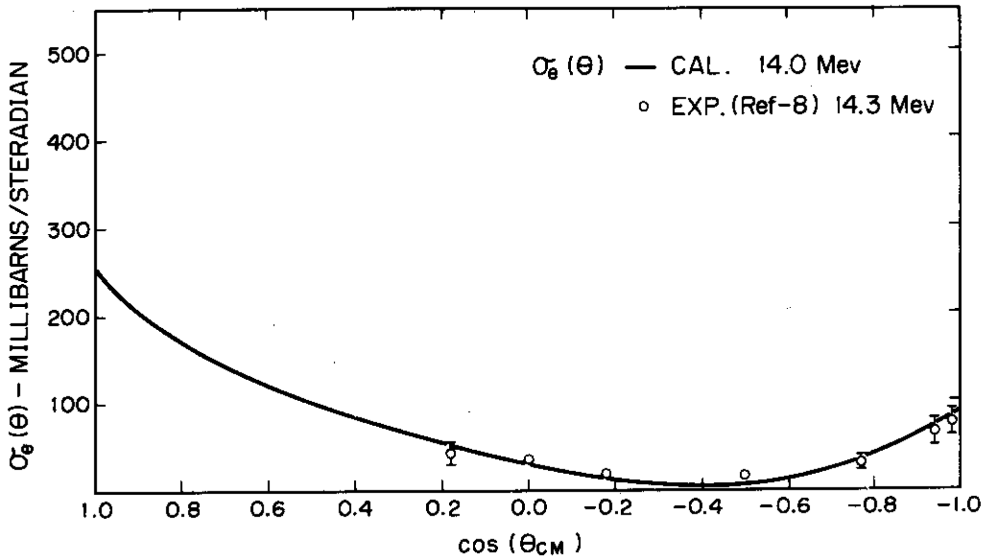

Fig.13 Comparison of the calculated elastic angular distribution in n-T reaction with the experimental data in n-T reaction about 14 MeV of incident neutron energy.

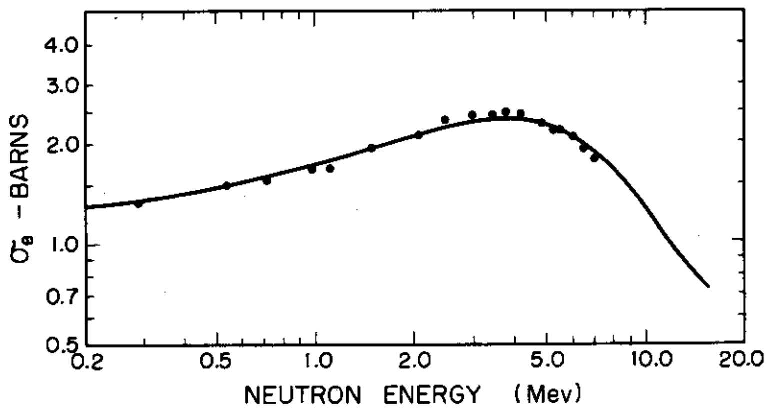

Fig.14 Comparison of the calculated n-T elastic scattering cross section by eq. 6 with the experimental data.