Status of the
Nuclear Data Library KEDAK-4

October 1984

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KERNFORSCHUNGSZENTRUM KARLSRUHE

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Abstract

This document summarizes the status and the contents of the lately revised
version of KEDAK. This report supersedes the previous reports KfK 2234 and
2386/I.

Stand der nuklearen Datenbibliothek KEDAK-4 Oktober 1984

Zusammenfassung

Dieser Bericht gibt eine Übersicht über den Stand und den Inhalt der neue-
sten Version von KEDAK. Dieser Bericht ersetzt die früheren Berichte KfK
2234 und 2386/I.

List of Tables

The revised version of the Karlsruhe nuclear data library KEDAK-4 is released in October 1984. In this report the status of KEDAK-4 is documented. This report supersedes the previous reports /1,2/ on this subject.

In Table 1 changes made in KEDAK with respect to the previous version of KEDAK /3,4/ are indicated. In the energy region where the neutron elastic scattering is isotropic in the center-of-mass system the values of $\bar{\mu}_\ell$ are corrected for all the isotopes. For all materials the consistency between resonance parameters and point cross sections stored on KEDAK is assured. In the version KEDAK-3 point cross sections for Cr, Fe and Ni were given, in conflict to KEDAK conventions, for room temperature. The present version has all point cross sections at 0 K.

The first version of KEDAK-4 was sent to some users in summer 1983. This version contained incorrect point cross sections across p-wave resonances of Th 232 and U 238 and like KEDAK-3 it had point cross sections for Cr, Fe and Ni at room temperature. These errors are removed from the present version.

Table 2 gives a list of contents of KEDAK-4 and the nomenclature of the data types on KEDAK is given in Table 3. The relationship among the redundant data on KEDAK is as follows:

absorption cross section (SGA)

$$\sigma_{ab} = \sigma(n,\gamma) + \sigma(n,f) + \sigma(n,p) + \sigma(n,d) + \sigma(n,\alpha)$$

non-elastic cross section (SGX)

$$\sigma_{non} = \sigma_{ab} + \sigma(n,n') + \sigma(n,2n) + \sigma(n,3n)$$

$$= \sigma_t - \sigma(n,n)$$

transport cross section (SGTR)

$$\sigma_{tr} = \sigma_t - \sigma(n,n) \cdot \bar{\mu}_\ell$$

It should be noted that the KEDAK-definition of the absorption cross section differs from that of CINDA. In KEDAK σ_{ab} contains all those processes in which no neutron appears in the exit channel. The only exception is σ_f which is included in σ_{ab}.

For the user of KEDAK reference is made to the KEDAK management and processing codes /5-10/ and related publication/11/.

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TABLE 1: <u>Status of the evaluation for different KEDAK-4 materials (October 1984)</u>

Material name	Comments	References
H1	Only ISOT1 and ISOT2 are available.	
H H1 (H bound in H_2) H O1 (H bound in H_2O)	1971: Data extended to 15 MeV. Revision of data for σ_t above 700 keV, σ_c throughout the energy range 0.001 eV to 15 MeV, angular distribution for elastic scattering and $\bar{\mu}_1$. 1975: σ_t and $\sigma(n,n)$ revised below 700 keV, for H O1.	3, 12, 13
H 2 (D)	1975: Data extended to 15 MeV and revised for σ_c, σ_t, σ_n and $\sigma(n,2n)$ above 1 keV.	3, 13
He 3	Data completed to 15 MeV.	3, 14
He 4	Data extended to 15 MeV.	3, 14
C 12	1971: Data extended to 15 MeV. Revision of data for $\sigma(n,n')$, $\sigma(n,p)$, $\sigma(n,\alpha)$, $\sigma(n,3\alpha)$ and 4 levels of inelastic scattering. 1975: Data revised for σ_c above 1 eV and σ_t below 1.4 MeV.	3, 12, 13
N	Only angular distributions of neutron elastic scattering for 48 energies between 100 keV and 15.8 MeV are available.	4

Table 1 cont.

Material name	Comments	References
O 16	1975: Data extended to 15 MeV. Data revised for scattering cross sections, σ_c, $\sigma(n,p)$, $\sigma(n,d)$ and $\sigma(n,\alpha)$.	3, 13
Na 23	1970: Data extended to 15 MeV. New evaluation for $\sigma(n,p)$, $\sigma(n,\alpha)$, $\sigma(n,2n)$ and σ_c above 1 MeV. 1971: Reevaluation of resonance data in the energy range 1 keV to 60 keV. 1975: Scattering data revised above 4 MeV and σ_c revised between 60 keV and 1 MeV.	3, 12, 13
Al 27	1967 – 1969: Reevaluation of data for resolved and statistical resonance parameters, elastic scattering and its angular distributions above 100 keV. 1975: Data for 5.9 keV resonance revised. σ_c revised between 0.1 eV and 7 keV. The data for $\sigma(n,n')$, $\sigma(n,p)$ and $\sigma(n,\alpha)$ are also modified above 10 MeV.	3, 4, 13
Cl	Data originates from UNC-5067 (1963)	15
Cl 35 Cl 37	Only ISOT1 and ISOT2 are available.	
Cr	1970: Data extended to 15 MeV. Data improved for σ_c above 1 MeV and for $\sigma(n,p)$, $\sigma(n,\alpha)$ and $\sigma(n,2n)$.	3, 13, 16, 28

Table 1 cont.

Material name	Comments	References
Cr (cont.)	1975: Data revised for σ_c above 100 keV and $\sigma(n,n')$ above 4 MeV. 1978: New evaluation up to 300 keV. 1984: Point data up to 300 keV revised.	
Cr 50 Cr 52 Cr 53 Cr 54	Only data for Reich-Moore resonance parameters, $\sigma(n,p)$, $\sigma(n,\alpha)$, $\sigma(n,2n)$, ISOT1 and ISOT2 are available. 1984: Revised resonance parameters.	13, 28
Fe	1970: Data extended to 15 MeV. Reevaluation of σ_c above 1 MeV and of $\sigma(n,p)$, $\sigma(n,\alpha)$ and $\sigma(n,2n)$. 1978: New evaluation up to 300 keV. 1984: Point data revised.	3, 13, 16, 17, 28
Fe 54 Fe 56 Fe 57 Fe 58	Only data for Reich-Moore resonance parameters, $\sigma(n,p)$, $\sigma(n,\alpha)$, $\sigma(n,2n)$, ISOT1 and ISOT2 are available. 1984: Revised resonance parameters.	13, 28
Ni	1970: Data extended to 15 MeV. Reevaluation of σ_c above 1 MeV and of $\sigma(n,p)$, $\sigma(n,\alpha)$ and $\sigma(n,2n)$. 1975: σ_c revised above 200 keV. $\sigma(n,n')$ revised above 4 MeV. 1978: New evaluation up to 300 keV. 1984: Point data revised.	3, 13, 16, 28
Ni 58	Only data for Reich-Moore resonance parameters, $\sigma(n,p)$, $\sigma(n,\alpha)$, $\sigma(n,2n)$, ISOT1 and ISOT2 are available.	13, 16, 18, 28

Table 1 cont.

Material name	Comments	References
Ni 58 (cont.)	1978: $\sigma(n,\gamma)$ 1984: Revised resonance parameters.	
Ni 59	1978: Partial evaluation	18
Ni 60 Ni 61 Ni 62 Ni 64	Only data for Reich-Moore resonance parameters, $\sigma(n,p)$, $\sigma(n,\alpha)$, $\sigma(n,2n)$, ISOT1 and ISOT2 are available. 1984: Revised resonance parameters	13, 28
Mo	1970: Data extended to 15 MeV. Reevaluation of σ_c above 1 MeV and of $\sigma(n,p)$, $\sigma(n,\alpha)$ and $\sigma(n,2n)$.	3, 12, 13
Mo 92 Mo 94 Mo 95 Mo 96 Mo 97 Mo 98 Mo 100	Data available only for resonance parameters, $\sigma(n,p)$, $\sigma(n,\alpha)$, $\sigma(n,2n)$, ISOT1 and ISOT2.	12, 13
Cd	No change in data except that mentioned in introduction.	3
Th 232	New KEDAK material, extensive revision of ENDF/B IV data in lower energy region. Resonance parameters are of Reich-Moore type.	28
U 233	Taken over from ENDF/B IV. Data revised in unresolved resonance region.	28

Table 1 cont.

Material name	Comments	References
U 235	1973: New evaluation of $\bar{\nu}$ and all other data above the resolved resonance region. MLBW resonance parameters. 1975: New evaluation of σ_f and σ_t above 100 keV.	3, 19, 20
U 237	1977: Partial evaluation	21
U 238	1975: Extensive revision of all data 1984: New data in resonance region	3, 20, 30
Np 237	1977: New evaluation	22
Pu 238	1974: New evaluation	23
Pu 239	1975: Extensive revision of most of the data	3, 21
Pu 240	1975: New evaluation of resonance parameters and capture cross sections between 4 keV and 1 MeV 1980: Data revised below 150 keV.	20, 24, 25, 29
Pu 241	1978: New evaluation of fission and capture cross sections below 300 keV 1980: New statistical resonance parameters	20, 25, 26, 30
Pu 242	1978: New evaluation of capture cross sections below 1 MeV 1980: Data revised below 140 keV.	25, 27, 29

Table 1 cont.

Material name	Comments	References
Am 241 Am 242^m Am 243	New evaluations	31, 32, 33
Cm 244	New evaluations	31, 32, 33, 34
Cm 246	New evaluations	35
Cm 248	New evaluations	36

Table 1 cont.

Table 2: List of contents of KEDAK-4

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************
*          *
* H    1   *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--

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************
*          *
* H   H1   *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	81	--	--	--
MUEL	1	1	21	1.0000E-03	--	1.50000E+07
SGA	1	1	100	1.0000E-03	--	1.50000E+07
SGALP	1	1	2	1.0000E-03	--	1.50000E+07
SGG	1	1	100	1.0000E-03	--	1.50000E+07
SGI	1	1	2	1.0000E-03	--	1.50000E+07
SGN	1	1	77	1.0000E-03	--	1.50000E+07
SGP	1	1	2	1.0000E-03	--	1.50000E+07
SGT	1	1	76	1.0000E-03	--	1.50000E+07
SGTR	1	1	81	1.0000E-03	--	1.50000E+07
SGX	1	1	100	1.0000E-03	--	1.50000E+07
SG2N	1	1	2	1.0000E-03	--	1.50000E+07
SGNC	1	1	FOR 19 ENERGIES BETWEEN 5.000000E+04 EV AND 1.600000E+07 EV		

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************
*          *
* H   O1   *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	90	--	--	--
MUEL	1	1	26	1.0000E-03	--	1.50000E+07
SGA	1	1	100	1.0000E-03	--	1.50000E+07
SGALP	1	1	2	1.0000E-03	--	1.50000E+07
SGG	1	1	100	1.0000E-03	--	1.50000E+07
SGI	1	1	2	1.0000E-03	--	1.50000E+07
SGN	1	1	54	1.0000E-03	--	1.50000E+07
SGP	1	1	2	1.0000E-03	--	1.50000E+07
SGT	1	1	55	1.0000E-03	--	1.50000E+07
SGTR	1	1	66	1.0000E-03	--	1.50000E+07
SGX	1	1	100	1.0000E-03	--	1.50000E+07
SG2N	1	1	2	1.0000E-03	--	1.50000E+07
SGNC	1	1	FOR 19 ENERGIES BETWEEN 5.000000E+04 EV AND 1.600000E+07 EV		

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***********
*         *
*  H    2 *
*         *
***********
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	54	--	--	--
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	23	1.0000E-03	--	1.50000E+07
SGA	1	1	151	1.0000E-03	--	1.50000E+07
SGALP	1	1	2	1.0000E-03	--	1.50000E+07
SGG	1	1	151	1.0000E-03	--	1.50000E+07
SGI	1	1	2	1.0000E-03	--	1.50000E+07
SGN	1	1	28	1.0000E-03	--	1.50000E+07
SGP	1	1	2	1.0000E-03	--	1.50000E+07
SGT	1	1	27	1.0000E-03	--	1.50000E+07
SGTR	1	1	39	1.0000E-03	--	1.50000E+07
SGX	1	1	141	1.0000E-03	--	1.50000E+07
SG2N	1	1	31	1.0000E-03	3.40000E+06	1.50000E+07
SGNC	1	1	FOR 14 ENERGIES BETWEEN 5.000000E+04 EV AND 1.410000E+07 EV

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***********
*         *
*  H    3 *
*         *
***********
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	14	1.0000E-05	--	2.00000E+07
SGA	1	1	2	1.0000E-05	--	2.00000E+07
SGN	1	1	26	1.0000E-05	--	2.00000E+07
SGT	1	1	25	1.0000E-05	--	2.00000E+07
SGTR	1	1	32	1.0000E-05	--	2.00000E+07
SGX	1	1	28	1.0000E-05	8.38000E+06	2.00000E+07
SG2N	1	1	28	1.0000E-05	8.38000E+06	2.00000E+07
SGNC	1	1	FOR 15 ENERGIES BETWEEN 1.000000E-05 EV AND 2.000000E+07 EV

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************
*          *
* HE   3   *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	27	--	--	--
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	10	1.0000E-03	--	1.50000E+07
SGA	1	1	89	1.0000E-03	--	1.50000E+07
SGD	1	1	17	1.0000E-03	4.35000E+06	1.50000E+07
SGG	1	1	2	1.0000E-03	--	1.50000E+07
SGI	1	1	2	1.0000E-03	--	1.50000E+07
SGN	1	1	27	1.0000E-03	--	1.50000E+07
SGP	1	1	79	1.0000E-03	--	1.50000E+07
SGT	1	1	97	1.0000E-03	--	1.50000E+07
SGTR	1	1	97	1.0000E-03	--	1.50000E+07
SGX	1	1	89	1.0000E-03	--	1.50000E+07
SGNC	1	1	FOR	8 ENERGIES BETWEEN	1.000000E+06 EV AND	1.500000E+07 EV

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************
*          *
* HE   4   *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	27	--	--	--
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	43	1.0000E-03	--	1.50000E+07
SGA	1	1	2	1.0000E-03	--	1.50000E+07
SGG	1	1	2	1.0000E-03	--	1.50000E+07
SGI	1	1	2	1.0000E-03	--	1.50000E+07
SGN	1	1	53	1.0000E-03	--	1.50000E+07
SGT	1	1	53	1.0000E-03	--	1.50000E+07
SGTR	1	1	62	1.0000E-03	--	1.50000E+07
SGX	1	1	2	1.0000E-03	--	1.50000E+07
SGNC	1	1	FOR	26 ENERGIES BETWEEN	1.000000E+05 EV AND	1.470000E+07 EV

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***********
*         *
*  C   12 *
*         *
***********
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	90	--	--	--
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	156	1.0000E-03	--	1.50000E+07
RANGRES	0	4	1	--	--	--
RES	3	8	14	2.0760E+06	--	1.20800E+07
SGA	1	1	204	1.0000E-03	--	1.50000E+07
SGALP	1	1	58	1.0000E-03	7.20000E+06	1.50000E+07
SGG	1	1	155	1.0000E-03	--	1.50000E+07
SGI	1	1	122	1.0000E-03	4.75000E+06	1.50000E+07
SGI3A	1	1	27	1.0000E-03	9.00000E+06	1.50000E+07
SGN	1	1	233	1.0000E-03	--	1.50000E+07
SGP	1	1	3	1.0000E-03	1.50000E+07	1.50000E+07
SGT	1	1	219	1.0000E-03	--	1.50000E+07
SGTR	1	1	242	1.0000E-03	--	1.50000E+07
SGX	1	1	270	1.0000E-03	--	1.50000E+07
SG2N	1	1	2	1.0000E-03	--	1.50000E+07
SGNC	1	1	FOR 42 ENERGIES BETWEEN	5.000000E+04 EV AND	1.420000E+07 EV	
SGIZ	1	1	FOR 5 EXCITED LEVELS			

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
4.43000E+06	117	1.0000E-03	4.75000E+06	1.50000E+07
7.65000E+06	4	1.0000E-03	9.00000E+06	1.50000E+07
9.66000E+06	12	1.0000E-03	1.08000E+07	1.50000E+07
1.08400E+07	6	1.0000E-03	1.20000E+07	1.50000E+07
1.18200E+07	4	1.0000E-03	1.30000E+07	1.50000E+07

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*  N      *
*         *
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	18	--	--	--
SGNC	1	1	FOR 41 ENERGIES BETWEEN	1.000000E+05 EV AND	1.583000E+07 EV	

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*         *
*  O  16  *
*         *
***********
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	45	--	--	--
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	275	1.0000E-03	--	1.50000E+07
RANGRES	0	4	1	--	--	--
RES	3	8	39	4.4200E+05	--	1.13000E+07
SGA	1	1	388	1.0000E-03	--	1.50000E+07
SGALP	1	1	219	1.0000E-03	3.65000E+06	1.50000E+07
SGD	1	1	14	1.0000E-03	1.10000E+07	1.50000E+07
SGG	1	1	166	1.0000E-03	--	1.50000E+07
SGI	1	1	130	1.0000E-03	6.50000E+06	1.50000E+07
SGN	1	1	407	1.0000E-03	--	1.50000E+07
SGP	1	1	32	1.0000E-03	1.04000E+07	1.50000E+07
SGT	1	1	488	1.0000E-03	--	1.50000E+07
SGTR	1	1	495	1.0000E-03	--	1.50000E+07
SGX	1	1	460	1.0000E-03	--	1.50000E+07
SG2N	1	1	2	1.0000E-03	--	1.50000E+07
SGNC	1	1	FOR 131 ENERGIES BETWEEN 1.000000E+05 EV AND 1.583000E+07 EV
SGIZ	1	1	FOR 24 EXCITED LEVELS

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
6.05200E+06	167	1.0000E-03	6.50000E+06	1.50000E+07
6.13100E+06	150	1.0000E-03	6.54000E+06	1.50000E+07
6.91700E+06	113	1.0000E-03	7.40000E+06	1.50000E+07
7.11900E+06	97	1.0000E-03	7.60000E+06	1.50000E+07
8.87200E+06	41	1.0000E-03	9.50000E+06	1.50000E+07
9.59700E+06	33	1.0000E-03	1.10000E+07	1.50000E+07
9.84700E+06	33	1.0000E-03	1.10000E+07	1.50000E+07
1.03540E+07	27	1.0000E-03	1.20000E+07	1.50000E+07
1.09520E+07	35	1.0000E-03	1.17960E+07	1.50000E+07
1.10800E+07	34	1.0000E-03	1.17960E+07	1.50000E+07
1.10960E+07	34	1.0000E-03	1.20000E+07	1.50000E+07
1.12600E+07	29	1.0000E-03	1.21000E+07	1.50000E+07
1.14400E+07	30	1.0000E-03	1.22480E+07	1.50000E+07
1.15210E+07	29	1.0000E-03	1.24000E+07	1.50000E+07
1.16300E+07	30	1.0000E-03	1.24000E+07	1.50000E+07
1.20530E+07	25	1.0000E-03	1.30000E+07	1.50000E+07
1.24420E+07	20	1.0000E-03	1.34000E+07	1.50000E+07
1.25280E+07	23	1.0000E-03	1.34000E+07	1.50000E+07
1.27950E+07	14	1.0000E-03	1.37850E+07	1.50000E+07
1.29670E+07	15	1.0000E-03	1.40000E+07	1.50000E+07
1.31500E+07	15	1.0000E-03	1.40000E+07	1.50000E+07
1.34500E+07	11	1.0000E-03	1.44000E+07	1.50000E+07
1.37500E+07	7	1.0000E-03	1.47000E+07	1.50000E+07
1.40500E+07	3	1.0000E-03	1.50000E+07	1.50000E+07

```
***********
*         *
* NA 23   *
*         *
***********
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	180	--	--	--
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	118	1.0000E-03	--	1.50000E+07
RANGRES	0	4	1	--	--	--
RES	3	8	233	2.8500E+03	--	8.57500E+05
SGA	1	1	719	1.0000E-03	--	1.50000E+07
SGALP	1	1	167	1.0000E-03	5.74000E+06	1.50000E+07
SGG	1	1	516	1.0000E-03	--	1.50000E+07
SGI	1	1	246	1.0000E-03	4.70000E+05	1.50000E+07
SGN	1	1	839	1.0000E-03	--	1.50000E+07
SGP	1	1	222	1.0000E-03	4.00000E+06	1.50000E+07
SGT	1	1	853	1.0000E-03	--	1.50000E+07
SGTR	1	1	863	1.0000E-03	--	1.50000E+07
SGX	1	1	828	1.0000E-03	--	1.50000E+07
SG2N	1	1	12	1.0000E-03	1.32000E+07	1.50000E+07
ST	2	6	2	0.0	--	0.0
STD	0	3	1	--	--	--
SGNC	1	1	FOR 63 ENERGIES BETWEEN 1.000000E+04 EV AND 1.430000E+07 EV		
SGIZ	1	1	FOR 7 EXCITED LEVELS		

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
4.39000E+05	216	1.0000E-03	4.70000E+05	4.00000E+06
2.07800E+06	111	1.0000E-03	2.18000E+06	4.00000E+06
2.39300E+06	87	1.0000E-03	2.52000E+06	4.00000E+06
2.64100E+06	52	1.0000E-03	2.81000E+06	4.00000E+06
2.70500E+06	86	1.0000E-03	2.83000E+06	4.00000E+06
2.98300E+06	41	1.0000E-03	3.12000E+06	4.00000E+06
3.68000E+06	8	1.0000E-03	3.85000E+06	4.00000E+06

```
************
*          *
* AL 27    *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	81	--	--	--
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	210	6.0000E-04	--	1.50000E+07
RANGRES	0	4	1	--	--	--
RES	3	8	62	5.9060E+03	--	4.45000E+05
SGA	1	1	340	6.0000E-04	--	1.50000E+07
SGALP	1	1	59	6.0000E-04	6.20000E+06	1.50000E+07
SGG	1	1	280	6.0000E-04	--	1.50000E+07
SGI	1	1	75	6.0000E-04	1.07000E+06	1.50000E+07
SGN	1	1	339	6.0000E-04	--	1.50000E+07
SGP	1	1	100	6.0000E-04	2.74000E+06	1.50000E+07
SGT	1	1	342	6.0000E-04	--	1.50000E+07
SGTR	1	1	354	6.0000E-04	--	1.50000E+07
SGX	1	1	313	6.0000E-04	--	1.50000E+07
SG2N	1	1	4	6.0000E-04	1.40000E+07	1.50000E+07
ST	2	6	2	0.0	--	0.0
STD	0	3	1	--	--	--
SGNC	1	1	FOR 36 ENERGIES BETWEEN		1.000000E+04 EV AND	1.430000E+07 EV
SGIZ	1	1	FOR 9 EXCITED LEVELS			

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
8.42000E+05	62	1.0000E-03	1.07000E+06	4.50000E+06
1.01300E+06	69	1.0000E-03	1.07000E+06	4.50000E+06
2.21000E+06	34	1.0000E-03	2.40000E+06	4.50000E+06
2.73000E+06	24	1.0000E-03	3.00000E+06	4.50000E+06
2.98000E+06	27	1.0000E-03	3.20000E+06	4.50000E+06
3.00000E+06	20	1.0000E-03	3.20000E+06	4.50000E+06
3.68000E+06	9	1.0000E-03	4.20000E+06	4.50000E+06
3.95000E+06	9	1.0000E-03	4.20000E+06	4.50000E+06
4.05000E+06	6	1.0000E-03	4.40000E+06	4.50000E+06

```
***********
*         *
*  CL     *
*         *
***********
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	18	--	--	--
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
ISOT3	1	1	2	3.5000E+01	--	3.70000E+01
MUEL	1	1	102	1.0000E-03	--	1.50000E+07
RANGRES	0	4	1	--	--	--
RES	3	8	27	-2.1000E+02	--	2.02000E+05
SGA	1	1	346	1.9000E-02	--	1.50000E+07
SGALP	1	1	40	1.9000E-02	2.00000E+06	1.50000E+07
SGG	1	1	307	1.9000E-02	--	1.50000E+07
SGI	1	1	50	1.9000E-02	1.04200E+06	1.50000E+07
SGN	1	1	280	1.9000E-02	--	1.50000E+07
SGP	1	1	295	1.9000E-02	--	1.50000E+07
SGT	1	1	263	1.9000E-02	--	1.50000E+07
SGTR	1	1	272	1.9000E-02	--	1.50000E+07
SGX	1	1	340	1.9000E-02	--	1.50000E+07
SG2N	1	1	7	1.9000E-02	1.27000E+07	1.50000E+07

```
***********
*         *
*  CL 35  *
*         *
***********
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--

```
***********
*         *
*  CL 37  *
*         *
***********
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--

```
************
*          *
*  CR      *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	81	--	--	--
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
ISOT3	1	1	4	5.0000E+01	--	5.40000E+01
MUEL	1	1	179	1.0000E-03	--	1.50000E+07
SGA	1	1	3342	1.0000E-03	--	1.50000E+07
SGALP	1	1	55	1.0000E-03	3.99000E+06	1.50000E+07
SGG	1	1	8374	1.0000E-03	--	1.50000E+07
SGI	1	1	168	1.0000E-03	5.79000E+05	1.50000E+07
SGN	1	1	2736	1.0000E-03	--	1.50000E+07
SGP	1	1	59	1.0000E-03	2.20000E+06	1.50000E+07
SGT	1	1	3080	1.0000E-03	--	1.50000E+07
SGTR	1	1	516	1.0000E-03	--	1.50000E+07
SG2N	1	1	36	1.0000E-03	8.12000E+06	1.50000E+07
SGNC	1	1	FOR	45 ENERGIES BETWEEN	1.000000E+04 EV AND	1.450000E+07 EV
SGIZ	1	1	FOR	8 EXCITED LEVELS		

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
5.65000E+05	111	1.0000E-03	5.79000E+05	3.19000E+06
7.82000E+05	85	1.0000E-03	8.00000E+05	3.19000E+06
1.00700E+06	71	1.0000E-03	1.03000E+06	3.19000E+06
1.43400E+06	19	1.0000E-03	1.45000E+06	3.19000E+06
1.83500E+06	38	1.0000E-03	2.00000E+06	3.19000E+06
2.32700E+06	31	1.0000E-03	2.40000E+06	3.19000E+06
2.62000E+06	19	1.0000E-03	2.68100E+06	3.19000E+06
2.96500E+06	12	1.0000E-03	3.02800E+06	3.19000E+06

```
************
*          *
*  CR 50   *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	63	-4.2255E+03	--	3.54000E+05
SGALP	1	1	58	1.0000E-03	3.99000E+06	1.50000E+07
SGP	1	1	34	1.0000E-03	2.20000E+06	1.50000E+07
SG2N	1	1	9	1.0000E-03	1.35000E+07	1.50000E+07
ST	2	6	3	0.0	--	1.00000E+00
STD	0	3	1	--	--	--

```
***********
*         *
* CR 52   *
*         *
***********
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	54	-4.6165E+03	--	4.01000E+05
SGALP	1	1	48	1.0000E-03	5.03000E+06	1.50000E+07
SGP	1	1	68	1.0000E-03	5.03000E+06	1.50000E+07
SG2N	1	1	12	1.0000E-03	1.25000E+07	1.50000E+07
ST	2	6	3	0.0	--	1.00000E+00
STD	0	3	1	--	--	--

```
***********
*         *
* CR 53   *
*         *
***********
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	78	-8.0270E+03	--	2.64310E+05
SGALP	1	1	27	1.0000E-03	4.02000E+06	1.50000E+07
SGP	1	1	52	1.0000E-03	4.02000E+06	1.50000E+07
SG2N	1	1	32	1.0000E-03	8.12000E+06	1.50000E+07
ST	2	6	6	0.0	--	1.00000E+00
STD	0	3	1	--	--	--

```
***********
*         *
* CR 54   *
*         *
***********
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	25	-2.4401E+03	--	3.00500E+05
SGALP	1	1	35	1.0000E-03	7.02000E+06	1.50000E+07
SGP	1	1	22	1.0000E-03	1.02500E+07	1.50000E+07
SG2N	1	1	21	1.0000E-03	9.98000E+06	1.50000E+07
ST	2	6	3	0.0	--	1.00000E+00
STD	0	3	1	--	--	--

```
************
*          *
*  FE      *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	54	--	--	--
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
ISOT3	1	1	4	5.4000E+01	--	5.80000E+01
MUEL	1	1	558	1.0000E-03	--	1.50000E+07
SGA	1	1	4156	1.0000E-03	--	1.50000E+07
SGALP	1	1	69	1.0000E-03	4.06000E+06	1.50000E+07
SGG	1	1	11114	1.0000E-03	--	1.50000E+07
SGI	1	1	1134	1.0000E-03	1.46552E+04	1.50000E+07
SGN	1	1	4210	1.0000E-03	--	1.50000E+07
SGP	1	1	125	1.0000E-03	5.28600E+05	1.50000E+07
SGT	1	1	4484	1.0000E-03	--	1.50000E+07
SGTR	1	1	1044	1.0000E-03	--	1.50000E+07
SG2N	1	1	37	1.0000E-03	7.96000E+06	1.50000E+07
SGNC	1	1	FOR 45 ENERGIES BETWEEN 1.000000E+04 EV AND 1.450000E+07 EV			
SGIZ	1	1	FOR 10 EXCITED LEVELS			

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
8.45000E+05	222	1.0000E-03	8.63200E+05	4.99000E+06
1.40800E+06	103	1.0000E-03	1.44470E+06	4.99000E+06
2.08000E+06	81	1.0000E-03	2.14000E+06	4.99000E+06
2.65500E+06	53	1.0000E-03	2.71000E+06	4.99000E+06
2.93600E+06	42	1.0000E-03	2.96000E+06	4.99000E+06
3.11800E+06	36	1.0000E-03	3.19000E+06	4.99000E+06
3.36700E+06	29	1.0000E-03	3.45000E+06	4.99000E+06
3.59900E+06	26	1.0000E-03	3.68000E+06	4.99000E+06
3.82500E+06	23	1.0000E-03	3.91000E+06	4.99000E+06
4.03800E+06	19	1.0000E-03	4.14000E+06	4.99000E+06

```
************
*          *
*  FE 54   *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	103	-6.8617E+04	--	3.71000E+05
SGALP	1	1	39	1.0000E-03	4.06000E+06	1.50000E+07
SGP	1	1	111	1.0000E-03	5.28600E+05	1.50000E+07
SG2N	1	1	7	1.0000E-03	1.40000E+07	1.50000E+07
ST	2	6	3	0.0	--	1.00000E+00
STD	0	3	1	--	--	--

```
************
*          *
* FE 56    *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	93	-5.1662E+03	--	3.80900E+05
SGALP	1	1	52	1.0000E-03	5.04000E+06	1.50000E+07
SGP	1	1	69	1.0000E-03	4.55000E+06	1.50000E+07
SG2N	1	1	14	1.0000E-03	1.17500E+07	1.50000E+07
ST	2	6	3	0.0	--	1.00000E+00
STD	0	3	1	--	--	--

```
************
*          *
* FE 57    *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	52	-3.3151E+04	--	1.89500E+05
SGALP	1	1	61	1.0000E-03	5.04000E+06	1.50000E+07
SGP	1	1	34	1.0000E-03	4.06000E+06	1.50000E+07
SG2N	1	1	33	1.0000E-03	7.96000E+06	1.50000E+07
ST	2	6	5	0.0	--	1.00000E+00
STD	0	3	1	--	--	--

```
************
*          *
* FE 58    *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
SGALP	1	1	27	1.0000E-03	7.04000E+06	1.50000E+07
SGP	1	1	40	1.0000E-03	4.06000E+06	1.50000E+07
STD	0	3	1	--	--	--

```
***********
*         *
* NI      *
*         *
***********
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	81	--	--	--
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
ISOT3	1	1	5	5.8000E+01	--	6.40000E+01
MUEL	1	1	302	1.0000E-03	--	1.50000E+07
SGA	1	1	3872	1.0000E-03	--	1.50000E+07
SGALP	1	1	57	1.0000E-03	2.08000E+06	1.50000E+07
SGG	1	1	10416	1.0000E-03	--	1.50000E+07
SGI	1	1	109	1.0000E-03	6.85162E+04	1.50000E+07
SGN	1	1	2695	1.0000E-03	--	1.50000E+07
SGP	1	1	141	1.0000E-03	7.92000E+05	1.50000E+07
SGT	1	1	3100	1.0000E-03	--	1.50000E+07
SGTR	1	1	912	1.0000E-03	--	1.50000E+07
SG2N	1	1	25	1.0000E-03	8.02300E+06	1.50000E+07
SGNC	1	1	FOR	46 ENERGIES BETWEEN	1.000000E+04 EV AND	1.400000E+07 EV
SGIZ	1	1	FOR	12 EXCITED LEVELS		

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
1.33200E+06	54	1.0000E-03	1.40000E+06	3.99300E+06
1.45200E+06	38	1.0000E-03	1.50000E+06	3.99300E+06
2.15800E+06	53	1.0000E-03	2.25000E+06	3.99300E+06
2.28700E+06	41	1.0000E-03	2.45000E+06	3.99300E+06
2.45800E+06	53	1.0000E-03	2.51200E+06	3.99300E+06
2.50200E+06	59	1.0000E-03	2.56400E+06	3.99300E+06
2.63000E+06	37	1.0000E-03	2.69000E+06	3.99300E+06
2.77200E+06	43	1.0000E-03	2.82500E+06	3.99300E+06
3.03500E+06	40	1.0000E-03	3.09500E+06	3.99300E+06
3.13000E+06	30	1.0000E-03	3.20400E+06	3.99300E+06
3.26000E+06	26	1.0000E-03	3.33700E+06	3.99300E+06
3.52000E+06	26	1.0000E-03	3.61000E+06	3.99300E+06

```
***********
*         *
* NI 58   *
*         *
***********
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	63	-7.0469E+03	--	3.94000E+05
SGALP	1	1	56	1.0000E-03	2.08000E+06	1.50000E+07
SGG	1	1	1176	1.0000E-03	--	1.50000E+07
SGP	1	1	143	1.0000E-03	7.92000E+05	1.50000E+07
SG2N	1	1	12	1.0000E-03	1.27500E+07	1.50000E+07
ST	2	6	3	0.0	--	1.00000E+00
STD	0	3	1	--	--	--

```
************
*          *
* NI 59    *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RES	3	8	5	2.0340E+02	--	9.10000E+03
SGALP	1	1	294	1.0000E-03	--	1.50000E+07
SGG	1	1	264	1.0000E-03	--	9.90000E+03
SGN	1	1	262	1.0000E-03	--	9.90000E+03
SGP	1	1	264	1.0000E-03	--	9.90000E+03
SGT	1	1	262	1.0000E-03	--	9.90000E+03

```
************
*          *
* NI 60    *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	66	-8.8094E+03	--	3.75500E+05
SGALP	1	1	38	1.0000E-03	4.15400E+06	1.50000E+07
SGP	1	1	72	1.0000E-03	4.00300E+06	1.50000E+07
SG2N	1	1	12	1.0000E-03	1.17500E+07	1.50000E+07
ST	2	6	3	0.0	--	1.00000E+00
STD	0	3	1	--	--	--

```
************
*          *
* NI 61    *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RES	3	8	58	-5.8937E+03	--	6.87700E+04
SGALP	1	1	36	1.0000E-03	6.02100E+06	1.50000E+07
SGP	1	1	70	1.0000E-03	4.05100E+06	1.50000E+07
SG2N	1	1	27	1.0000E-03	8.02300E+06	1.50000E+07
ST	2	6	6	0.0	--	1.00000E+00
STD	0	3	1	--	--	--

```
************
*          *
* NI 62    *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	46	-3.2226E+03	--	3.88500E+05
SGALP	1	1	42	1.0000E-03	8.02300E+06	1.50000E+07
SGP	1	1	66	1.0000E-03	6.07100E+06	1.50000E+07
SG2N	1	1	17	1.0000E-03	1.10000E+07	1.50000E+07
ST	2	6	3	0.0	--	1.00000E+00
STD	0	3	1	--	--	--

```
***********
*         *
* NI 64   *
*         *
***********
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RES	3	8	29	-1.1490E+04	--	3.89000E+05
SGALP	1	1	12	1.0000E-03	1.27500E+07	1.50000E+07
SGP	1	1	14	1.0000E-03	1.22500E+07	1.50000E+07
SG2N	1	1	21	1.0000E-03	9.95400E+06	1.50000E+07
ST	2	6	3	0.0	--	1.00000E+00
STD	0	3	1	--	--	--

```
***********
*         *
* MO      *
*         *
***********
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	63	--	--	--
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
ISOT3	1	1	7	9.2000E+01	--	1.00000E+02
MUEL	1	1	139	1.0000E-03	--	1.50000E+07
RANGRES	0	4	1	--	--	--
RES	3	8	51	1.2000E+01	--	1.66600E+04
SGA	1	1	1356	1.0000E-03	--	1.50000E+07
SGALP	1	1	64	1.0000E-03	4.83300E+06	1.50000E+07
SGG	1	1	1390	1.0000E-03	--	1.50000E+07
SGI	1	1	107	1.0000E-03	2.20000E+05	1.50000E+07
SGN	1	1	1378	1.0000E-03	--	1.50000E+07
SGP	1	1	53	1.0000E-03	1.55000E+06	1.50000E+07
SGT	1	1	1585	1.0000E-03	--	1.50000E+07
SGTR	1	1	1582	1.0000E-03	--	1.50000E+07
SGX	1	1	1338	1.0000E-03	--	1.50000E+07
SG2N	1	1	38	1.0000E-03	7.05400E+06	1.50000E+07
SGNC	1	1	FOR	39 ENERGIES BETWEEN	1.000000E+04 EV AND	1.400000E+07 EV
SGIZ	1	1	FOR	8 EXCITED LEVELS		

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
2.03000E+05	59	1.0000E-03	2.20000E+05	2.06000E+06
5.30000E+05	42	1.0000E-03	5.40000E+05	2.06000E+06
7.80000E+05	33	1.0000E-03	7.95000E+05	2.06000E+06
9.30000E+05	23	1.0000E-03	9.55000E+05	2.06000E+06
1.10000E+06	14	1.0000E-03	1.12000E+06	2.06000E+06
1.26000E+06	11	1.0000E-03	1.30000E+06	2.06000E+06
1.50000E+06	8	1.0000E-03	1.55000E+06	2.06000E+06
1.86000E+06	4	1.0000E-03	1.90000E+06	2.06000E+06

```
************
*          *
* MO 92    *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	5	3.4680E+02	--	1.66600E+04
SGALP	1	1	37	1.0000E-03	7.85200E+06	1.50000E+07
SGP	1	1	44	1.0000E-03	1.55000E+06	1.50000E+07
SG2N	1	1	10	1.0000E-03	1.30000E+07	1.50000E+07
ST	2	6	1	0.0	--	1.00000E+00
STD	0	3	1	--	--	--

```
************
*          *
* MO 94    *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	3	1.5190E+03	--	5.38000E+03
SGALP	1	1	55	1.0000E-03	6.00200E+06	1.50000E+07
SGP	1	1	47	1.0000E-03	7.51100E+06	1.50000E+07
SG2N	1	1	30	1.0000E-03	9.85200E+06	1.50000E+07
ST	2	6	1	0.0	--	1.00000E+00
STD	0	3	1	--	--	--

```
************
*          *
* MO 95    *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	14	4.5100E+01	--	7.40000E+03
SGALP	1	1	35	1.0000E-03	4.83300E+06	1.50000E+07
SGP	1	1	44	1.0000E-03	6.00200E+06	1.50000E+07
SG2N	1	1	40	1.0000E-03	7.24300E+06	1.50000E+07
ST	2	6	2	0.0	--	0.0
STD	0	3	1	--	--	--

```
***********
*         *
* MO 96   *
*         *
***********
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	4	1.1350E+02	--	3.30000E+03
SGALP	1	1	43	1.0000E-03	6.52300E+06	1.50000E+07
SGP	1	1	49	1.0000E-03	7.51100E+06	1.50000E+07
SG2N	1	1	30	1.0000E-03	9.26300E+06	1.50000E+07
ST	2	6	1	0.0	--	1.00000E+00
STD	0	3	1	--	--	--

```
***********
*         *
* MO 97   *
*         *
***********
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	10	7.0900E+01	--	1.25500E+03
SGALP	1	1	52	1.0000E-03	6.20100E+06	1.50000E+07
SGP	1	1	47	1.0000E-03	8.00600E+06	1.50000E+07
SG2N	1	1	25	1.0000E-03	7.05400E+06	1.50000E+07
ST	2	6	2	0.0	--	0.0
STD	0	3	1	--	--	--

```
***********
*         *
* MO 98   *
*         *
***********
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	9	1.2000E+01	--	9.00000E+03
SGALP	1	1	26	1.0000E-03	8.00600E+06	1.50000E+07
SGP	1	1	19	1.0000E-03	1.06000E+07	1.50000E+07
SG2N	1	1	29	1.0000E-03	8.48200E+06	1.50000E+07
ST	2	6	1	0.0	--	1.00000E+00
STD	0	3	1	--	--	--

```
************
*          *
* MO100    *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	6	9.7700E+01	--	1.93600E+03
SGALP	1	1	39	1.0000E-03	8.56800E+06	1.50000E+07
SGP	1	1	20	1.0000E-03	1.12000E+07	1.50000E+07
SG2N	1	1	28	1.0000E-03	8.48200E+06	1.50000E+07
ST	2	6	1	0.0	--	1.00000E+00
STD	0	3	1	--	--	--

```
************
*          *
* CD       *
*          *
************
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	36	--	--	--
ISOT1	0	3	1	--	--	--
ISOT3	1	1	8	1.0600E+02	--	1.16000E+02
MUEL	1	1	46	1.0000E-03	--	1.50000E+07
RANGRES	0	4	1	--	--	--
RES	3	8	60	1.7800E-01	--	1.12500E+03
SGA	1	1	4160	1.0000E-03	--	1.50000E+07
SGALP	1	1	11	1.0000E-03	7.00000E+06	1.50000E+07
SGG	1	1	4150	1.0000E-03	--	1.50000E+07
SGI	1	1	44	1.0000E-03	3.50000E+05	1.50000E+07
SGN	1	1	3175	1.0000E-03	--	1.50000E+07
SGP	1	1	19	1.0000E-03	4.00000E+06	1.50000E+07
SGT	1	1	3673	1.0000E-03	--	1.50000E+07
SGTR	1	1	3690	1.0000E-03	--	1.50000E+07
SGX	1	1	4145	1.0000E-03	--	1.50000E+07
SG2N	1	1	17	1.0000E-03	8.00000E+06	1.50000E+07
SGIZ	1	1	FOR	4 EXCITED LEVELS		

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
3.00000E+05	19	1.0000E-03	3.50000E+05	1.40000E+06
6.00000E+05	13	1.0000E-03	6.50000E+05	1.40000E+06
1.20000E+06	4	1.0000E-03	1.30000E+06	1.40000E+06
1.30000E+06	3	1.0000E-03	1.40000E+06	1.40000E+06

```
***********
*         *
* TH232   *
*         *
***********
```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	927	--	--	--
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	12	1.0000E-05	--	2.00000E+07
NUE	1	1	3	1.0000E-03	--	2.00000E+07
RANGRES	0	4	1	--	--	--
RES	3	8	358	-6.3239E+00	--	3.00700E+03
SGA	1	1	17229	1.0000E-03	--	2.00000E+07
SGF	1	1	32	1.0000E-05	1.30000E+06	2.00000E+07
SGG	1	1	17449	1.0000E-03	--	2.00000E+07
SGI	1	1	34	1.0000E-05	6.00000E+04	2.00000E+07
SGIZC	1	1	26	1.0000E-05	1.30000E+06	2.00000E+07
SGN	1	1	7979	1.0000E-03	--	2.00000E+07
SGT	1	1	9169	1.0000E-03	--	2.00000E+07
SG2N	1	1	16	1.0000E-05	6.50000E+06	2.00000E+07
SG3N	1	1	7	1.0000E-05	1.20000E+07	2.00000E+07
ST	2	6	5	0.0	--	2.00000E+00
STD	0	3	1	--	--	--
SGNC	1	1	FOR 13 ENERGIES BETWEEN 1.000000E-05 EV AND 2.000000E+07 EV			
SGIZ	1	1	FOR 8 EXCITED LEVELS			

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
5.00000E+04	36	1.0000E-05	6.00000E+04	2.00000E+07
1.70000E+05	27	1.0000E-05	2.00000E+05	2.00000E+07
3.30000E+05	25	1.0000E-05	3.50000E+05	2.00000E+07
7.20000E+05	21	1.0000E-05	7.50000E+05	2.00000E+07
7.90000E+05	18	1.0000E-05	8.50000E+05	2.00000E+07
8.20000E+05	16	1.0000E-05	9.00000E+05	2.00000E+07
1.05000E+06	15	1.0000E-05	1.10000E+06	2.00000E+07
1.15000E+06	15	1.0000E-05	1.20000E+06	2.00000E+07

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************
*          *
* U 233    *
*          *
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```

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
CHICR	1	3	1	2.5300E-02	--	1.67600E-06
ETA	1	1	291	1.0000E-05	--	2.00000E+07
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
LEGNC						

TYPES WITH MORE THAN TWO FURTHER NAMES WILL NOT BE REGARDED

TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
MUEL	1	1	30	1.0000E-05	--	2.00000E+07
NUE	1	1	5	1.0000E-05	--	2.00000E+07
RANGRES	0	4	1	--	--	--
RES	3	8	80	-2.8100E+00	--	6.27200E+01
SGA	1	1	1263	1.0000E-05	--	2.00000E+07
SGF	1	1	1292	1.0000E-05	--	2.00000E+07
SGG	1	1	1523	1.0000E-05	--	2.00000E+07
SGI	1	1	39	1.0000E-05	6.00000E+04	2.00000E+07
SGIZC	1	1	29	1.0000E-05	7.00000E+05	2.00000E+07
SGN	1	1	430	1.0000E-05	--	2.00000E+07
SGT	1	1	1165	1.0000E-05	--	2.00000E+07
SG2N	1	1	15	1.0000E-05	6.50000E+06	2.00000E+07
SG3N	1	1	5	1.0000E-05	1.40000E+07	2.00000E+07
ST	2	6	6	0.0	--	1.00000E+00
STD	0	3	1	--	--	--
STGF	3	8	72	4.5000E+01	--	2.15000E+05
SGNC	1	1	FOR 43 ENERGIES BETWEEN 1.000000E-05 EV AND 2.000000E+07 EV			
SGIZ	1	1	FOR 7 EXCITED LEVELS			

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
4.04000E+04	22	1.0000E-05	6.00000E+04	2.00000E+07
9.20000E+04	17	1.0000E-05	1.20000E+05	2.00000E+07
3.12000E+05	10	1.0000E-05	5.00000E+05	2.00000E+07
3.40000E+05	10	1.0000E-05	5.00000E+05	2.00000E+07
3.99000E+05	9	1.0000E-05	6.00000E+05	2.00000E+07
4.16000E+05	7	1.0000E-05	6.00000E+05	2.00000E+07
4.61000E+05	9	1.0000E-05	6.00000E+05	2.00000E+07

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***********
*         *
* U 235   *
*         *
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	234	--	--	--
ALPHA	1	1	5710	1.0000E-03	--	1.50000E+07
CHICR	1	3	1	0.0	--	2.29000E-06
CHIF	1	1	219	1.0000E-03	--	1.00000E+07
ETA	1	1	4188	1.0000E-03	--	1.50000E+07
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	52	1.0000E-03	--	1.50000E+07
NUE	1	1	16	1.0000E-03	--	1.50000E+07
PLNUE	0	4	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	199	-1.9190E+01	--	1.00100E+02
SGA	1	1	10827	1.0000E-03	--	1.50000E+07
SGALP	1	1	2	1.0000E-03	--	1.50000E+07
SGF	1	1	11186	1.0000E-03	--	1.50000E+07
SGG	1	1	11861	1.0000E-03	--	1.50000E+07
SGI	1	1	131	1.0000E-03	2.09999E+04	1.50000E+07
SGN	1	1	9115	1.0000E-03	--	1.50000E+07
SGP	1	1	2	1.0000E-03	--	1.50000E+07
SGT	1	1	9042	1.0000E-03	--	1.50000E+07
SG2N	1	1	60	1.0000E-03	5.40000E+06	1.50000E+07
SG3N	1	1	21	1.0000E-03	1.26000E+07	1.50000E+07
ST	2	6	6	0.0	--	1.00000E+00
STD	0	3	1	--	--	--
STGF	3	8	66	1.0000E+02	--	2.15000E+05
SGNC	1	1	FOR	43 ENERGIES BETWEEN	1.000000E+04 EV AND	1.520000E+07 EV
SGIZ	1	1	FOR	10 EXCITED LEVELS		

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
1.00000E+04	53	1.0000E-03	2.09999E+04	2.40000E+06
6.00000E+04	43	1.0000E-03	8.50000E+04	2.40000E+06
9.00000E+04	43	1.0000E-03	1.20000E+05	2.40000E+06
2.00000E+05	26	1.0000E-03	2.40000E+05	2.40000E+06
3.00000E+05	38	1.0000E-03	3.40000E+05	2.40000E+06
5.00000E+05	37	1.0000E-03	5.20000E+05	2.40000E+06
1.00000E+06	15	1.0000E-03	1.10000E+06	2.40000E+06
1.50000E+06	11	1.0000E-03	1.60000E+06	2.40000E+06
1.75000E+06	9	1.0000E-03	1.80000E+06	2.40000E+06
2.00000E+06	6	1.0000E-03	2.10000E+06	2.40000E+06

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*         *
* U 237   *
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ALPHA	1	1	51	1.1000E+04	--	7.00000E+05
SGA	1	1	51	1.1000E+04	--	7.00000E+05
SGF	1	1	51	1.1000E+04	--	7.00000E+05
SGG	1	1	51	1.1000E+04	--	7.00000E+05
SGI	1	1	52	1.0000E-03	1.20000E+04	7.00000E+05
SGN	1	1	51	1.1000E+04	--	7.00000E+05
SGT	1	1	51	1.1000E+04	--	7.00000E+05
SGX	1	1	51	1.1000E+04	--	7.00000E+05
SGIZ	1	1	FOR 17 EXCITED LEVELS			

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
1.10000E+04	52	1.0000E-05	1.20000E+04	7.00000E+05
5.60000E+04	36	1.0000E-05	6.10000E+04	7.00000E+05
8.20000E+04	32	1.0000E-05	9.10000E+04	7.00000E+05
1.60000E+05	26	1.0000E-05	1.61000E+05	7.00000E+05
1.62000E+05	21	1.0000E-05	2.20000E+05	7.00000E+05
2.03000E+05	23	1.0000E-05	2.04000E+05	7.00000E+05
2.04000E+05	20	1.0000E-05	2.62000E+05	7.00000E+05
2.61000E+05	18	1.0000E-05	3.00000E+05	7.00000E+05
2.74000E+05	18	1.0000E-05	3.00000E+05	7.00000E+05
3.16000E+05	16	1.0000E-05	3.27000E+05	7.00000E+05
3.26000E+05	13	1.0000E-05	4.10000E+05	7.00000E+05
3.67000E+05	9	1.0000E-05	5.43000E+05	7.00000E+05
4.32000E+05	3	1.0000E-05	7.00000E+05	7.00000E+05
4.82000E+05	10	1.0000E-05	5.10000E+05	7.00000E+05
5.41000E+05	8	1.0000E-05	5.53000E+05	7.00000E+05
5.51000E+05	6	1.0000E-05	6.10000E+05	7.00000E+05
5.55000E+05	6	1.0000E-05	6.10000E+05	7.00000E+05

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*  U 238   *
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	90	--	--	--
CHICR	1	3	1	0.0	--	2.29000E-06
CHIF	1	1	206	1.0000E-03	--	1.00000E+07
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	55	1.0000E-03	--	1.50000E+07
NUE	1	1	8	1.0000E-03	--	1.50000E+07
PLNUE	0	4	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	442	-1.1516E+02	--	3.99294E+03
SGA	1	1	20205	1.0000E-03	--	1.50000E+07
SGALP	1	1	2	1.0000E-03	--	1.50000E+07
SGF	1	1	112	1.0000E-03	5.00000E+05	1.50000E+07
SGG	1	1	22487	1.0000E-03	--	1.50000E+07
SGI	1	1	95	1.0000E-03	4.70000E+04	1.50000E+07
SGIZC	1	1	60	1.0000E-03	2.30000E+06	1.50000E+07
SGN	1	1	10619	1.0000E-03	--	1.50000E+07
SGP	1	1	2	1.0000E-03	--	1.50000E+07
SGT	1	1	12528	1.0000E-03	--	1.50000E+07
SG2N	1	1	32	1.0000E-03	6.16100E+06	1.50000E+07
SG3N	1	1	15	1.0000E-03	1.16100E+07	1.50000E+07
ST	2	6	5	0.0	--	2.00000E+00
STD	0	3	1	--	--	--
SGNC	1	1	FOR	42 ENERGIES BETWEEN	1.000000E+04 EV AND	1.400000E+07 EV
SGIZ	1	1	FOR	26 EXCITED LEVELS		

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
4.50000E+04	49	1.0000E-03	4.70000E+04	4.50000E+06
1.46000E+05	17	1.0000E-03	1.80000E+05	3.80000E+06
3.08000E+05	8	1.0000E-03	4.08000E+05	3.80000E+06
6.80000E+05	20	1.0000E-03	7.00000E+05	3.80000E+06
7.32000E+05	17	1.0000E-03	8.00000E+05	3.80000E+06
8.27000E+05	14	1.0000E-03	9.00000E+05	3.80000E+06
9.30000E+05	18	1.0000E-03	9.50000E+05	3.80000E+06
9.67000E+05	17	1.0000E-03	1.00000E+06	3.80000E+06
1.00000E+06	17	1.0000E-03	1.10000E+06	3.80000E+06
1.04100E+06	20	1.0000E-03	1.10000E+06	3.80000E+06
1.06000E+06	21	1.0000E-03	1.10000E+06	3.80000E+06
1.12000E+06	18	1.0000E-03	1.20000E+06	3.80000E+06
1.16000E+06	11	1.0000E-03	1.20000E+06	3.80000E+06
1.22000E+06	12	1.0000E-03	1.30000E+06	3.80000E+06
1.27000E+06	11	1.0000E-03	1.30000E+06	3.80000E+06
1.30000E+06	10	1.0000E-03	1.40000E+06	3.80000E+06
1.36100E+06	10	1.0000E-03	1.40000E+06	3.80000E+06
1.40900E+06	9	1.0000E-03	1.50000E+06	3.80000E+06
1.43700E+06	10	1.0000E-03	1.50000E+06	3.80000E+06
1.47000E+06	12	1.0000E-03	1.50000E+06	3.80000E+06
1.62500E+06	14	1.0000E-03	1.65000E+06	4.50000E+06
1.87500E+06	12	1.0000E-03	1.90000E+06	4.50000E+06
1.95000E+06	28	1.0000E-03	2.50000E+06	1.50000E+07
2.95000E+06	23	1.0000E-03	3.50000E+06	1.50000E+07
3.95000E+06	20	1.0000E-03	4.50000E+06	1.50000E+07
4.95000E+06	18	1.0000E-03	5.50000E+06	1.50000E+07

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*  NP237   *
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ALPHA	1	1	108	2.0000E+02	--	1.50000E+07
CHICR	1	3	2	1.0000E-03	--	1.50000E+07
ETA	1	1	108	2.0000E+02	--	1.50000E+07
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	108	2.0000E+02	--	1.50000E+07
NUE	1	1	108	2.0000E+02	--	1.50000E+07
PLNUE	0	4	1	--	--	--
RES	3	8	251	-1.7492E+00	--	2.35300E+02
SGA	1	1	11064	1.0000E-03	--	1.50000E+07
SGF	1	1	4478	1.0000E-03	--	1.50000E+07
SGG	1	1	11144	1.0000E-03	--	1.50000E+07
SGI	1	1	89	1.0000E-03	4.00000E+04	1.50000E+07
SGN	1	1	4627	1.0000E-03	--	1.50000E+07
SGT	1	1	8591	1.0000E-03	--	1.50000E+07
SGTR	1	1	108	2.0000E+02	--	1.50000E+07
SGX	1	1	108	2.0000E+02	--	1.50000E+07
SG2N	1	1	21	1.0000E-03	7.00000E+06	1.50000E+07
SG3N	1	1	7	1.0000E-03	1.30000E+07	1.50000E+07
ST	2	6	6	0.0	--	1.00000E+00
STD	0	3	1	--	--	--
STGF	3	8	60	5.0000E+01	--	4.00000E+04
SGNC	1	1	FOR 108 ENERGIES BETWEEN 2.000000E+02 EV AND 1.500000E+07 EV			
SGIZ	1	1	FOR 22 EXCITED LEVELS			

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
3.32100E+04	35	1.0000E-05	4.00000E+04	5.50000E+05
5.95400E+04	32	1.0000E-05	7.00000E+04	5.50000E+05
7.60000E+04	30	1.0000E-05	8.00000E+04	5.50000E+05
1.02960E+05	26	1.0000E-05	1.30550E+05	5.50000E+05
1.30000E+05	25	1.0000E-05	1.59170E+05	5.50000E+05
1.58500E+05	24	1.0000E-05	1.91300E+05	5.50000E+05
1.90500E+05	21	1.0000E-05	2.68670E+05	5.50000E+05
2.26000E+05	21	1.0000E-05	2.68670E+05	5.50000E+05
2.67540E+05	20	1.0000E-05	2.82540E+05	5.50000E+05
2.81350E+05	19	1.0000E-05	3.06390E+05	5.50000E+05
3.05100E+05	18	1.0000E-05	3.29380E+05	5.50000E+05
3.28000E+05	17	1.0000E-05	3.33760E+05	5.50000E+05
3.32360E+05	16	1.0000E-05	3.59510E+05	5.50000E+05
3.58000E+05	15	1.0000E-05	3.70150E+05	5.50000E+05
3.68590E+05	14	1.0000E-05	3.72510E+05	5.50000E+05
3.70940E+05	13	1.0000E-05	3.97270E+05	5.50000E+05
4.37500E+05	10	1.0000E-05	4.54510E+05	5.50000E+05
4.52600E+05	9	1.0000E-05	4.61340E+05	5.50000E+05
4.59400E+05	8	1.0000E-05	4.86540E+05	5.50000E+05
4.84500E+05	7	1.0000E-05	4.99100E+05	5.50000E+05
5.14000E+05	4	1.0000E-05	5.47300E+05	5.50000E+05
5.45000E+05	3	1.0000E-05	5.50000E+05	5.50000E+05

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* PU238   *
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	27	--	--	--
ALPHA	1	1	1478	1.0000E-03	--	1.50000E+07
CHICR	1	3	2	1.0000E-03	--	1.50000E+07
ETA	1	1	1179	1.0000E-03	--	1.50000E+07
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	70	1.0000E-03	--	1.50000E+07
NUE	1	1	2	1.0000E-03	--	1.50000E+07
PLNUE	0	4	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	52	-4.0000E-01	--	4.96000E+02
SGA	1	1	5332	1.0000E-03	--	1.50000E+07
SGF	1	1	4991	1.0000E-03	--	1.50000E+07
SGG	1	1	5502	1.0000E-03	--	1.50000E+07
SGI	1	1	71	1.0000E-03	4.99000E+04	1.50000E+07
SGN	1	1	3106	1.0000E-03	--	1.50000E+07
SGT	1	1	3596	1.0000E-03	--	1.50000E+07
SGTR	1	1	3418	1.0000E-03	--	1.50000E+07
SG2N	1	1	15	1.0000E-03	7.03000E+06	1.50000E+07
SG3N	1	1	6	1.0000E-03	1.35000E+07	1.50000E+07
ST	2	6	5	0.0	--	2.00000E+00
STD	0	3	1	--	--	--
STGF	3	8	55	5.0000E+01	--	2.50000E+05
SGNC	1	1	FOR 126 ENERGIES BETWEEN 4.650000E+02 EV AND 1.500000E+07 EV
SGIZ	1	1	FOR 19 EXCITED LEVELS

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
4.40800E+04	48	1.0000E-03	4.99000E+04	1.70000E+06
1.45960E+05	34	1.0000E-03	2.02000E+05	1.70000E+06
3.03600E+05	21	1.0000E-03	6.64000E+05	1.70000E+06
6.05180E+05	22	1.0000E-03	6.64000E+05	1.70000E+06
6.61450E+05	23	1.0000E-03	7.43000E+05	1.70000E+06
9.41500E+05	18	1.0000E-03	9.66000E+05	1.70000E+06
9.62770E+05	18	1.0000E-03	9.73000E+05	1.70000E+06
9.68900E+05	17	1.0000E-03	9.87000E+05	1.70000E+06
9.83000E+05	16	1.0000E-03	9.89000E+05	1.70000E+06
9.85460E+05	14	1.0000E-03	1.00000E+06	1.70000E+06
1.02850E+06	13	1.0000E-03	1.07400E+06	1.70000E+06
1.06990E+06	11	1.0000E-03	1.08700E+06	1.70000E+06
1.08260E+06	11	1.0000E-03	1.20700E+06	1.70000E+06
1.20270E+06	10	1.0000E-03	1.23300E+06	1.70000E+06
1.22860E+06	8	1.0000E-03	1.26900E+06	1.70000E+06
1.26420E+06	8	1.0000E-03	1.35000E+06	1.70000E+06
1.44730E+06	6	1.0000E-03	1.50000E+06	1.70000E+06
1.62140E+06	4	1.0000E-03	1.64300E+06	1.70000E+06
1.63660E+06	3	1.0000E-03	1.70000E+06	1.70000E+06

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* PU239   *
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	117	--	--	--
ALPHA	1	1	8512	1.0000E-03	--	1.50000E+07
CHICR	1	3	1	0.0	--	2.00000E-06
CHIF	1	1	175	1.0000E-03	--	1.00000E+07
ETA	1	1	4498	1.0000E-03	--	1.50000E+07
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	48	1.0000E-03	--	1.50000E+07
NUE	1	1	6	1.0000E-03	--	1.50000E+07
PLNUE	0	4	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	258	-1.2000E+00	--	6.58290E+02
SGA	1	1	12050	1.0000E-03	--	1.50000E+07
SGALP	1	1	2	1.0000E-03	--	1.50000E+07
SGF	1	1	10481	1.0000E-03	--	1.50000E+07
SGG	1	1	13844	1.0000E-03	--	1.50000E+07
SGI	1	1	110	1.0000E-03	8.50000E+03	1.50000E+07
SGN	1	1	7181	1.0000E-03	--	1.50000E+07
SGP	1	1	2	1.0000E-03	--	1.00000E+07
SGT	1	1	9781	1.0000E-03	--	1.50000E+07
SGTR	1	1	8944	1.0000E-03	--	1.50000E+07
SG2N	1	1	30	1.0000E-03	5.80000E+06	1.50000E+07
SG3N	1	1	8	1.0000E-03	1.28000E+07	1.50000E+07
ST	2	6	5	0.0	--	1.00000E+00
STD	0	3	1	--	--	--
STGF	3	8	45	4.5000E+02	--	2.15000E+05
SGNC	1	1	FOR	43 ENERGIES BETWEEN	1.000000E+04 EV AND	1.520000E+07 EV
SGIZ	1	1	FOR	7 EXCITED LEVELS		

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
8.00000E+03	37	1.0000E-03	8.50000E+03	5.50000E+05
5.70000E+04	22	1.0000E-03	6.00000E+04	5.50000E+05
7.60000E+04	24	1.0000E-03	8.00000E+04	5.50000E+05
1.64000E+05	15	1.0000E-03	1.70000E+05	5.50000E+05
2.86000E+05	12	1.0000E-03	2.90000E+05	5.50000E+05
3.31000E+05	8	1.0000E-03	3.40000E+05	5.50000E+05
3.92000E+05	6	1.0000E-03	4.00000E+05	5.50000E+05

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* PU240   *
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	72	--	--	--
ALPHA	1	1	3636	1.0000E-03	--	1.50000E+07
CHICR	1	3	2	1.0000E-03	--	1.50000E+07
ETA	1	1	3587	1.0000E-03	--	1.50000E+07
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	46	1.0000E-03	--	1.50000E+07
NUE	1	1	2	1.0000E-03	--	1.50000E+07
PLNUE	0	4	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	204	1.0580E+00	--	3.99000E+03
SGA	1	1	14211	1.0000E-03	--	1.50000E+07
SGF	1	1	13466	1.0000E-03	--	1.50000E+07
SGG	1	1	14449	1.0000E-03	--	1.50000E+07
SGI	1	1	57	1.0000E-03	4.99000E+04	1.50000E+07
SGN	1	1	8750	1.0000E-03	--	1.50000E+07
SGT	1	1	8646	1.0000E-03	--	1.50000E+07
SG2N	1	1	12	1.0000E-03	6.70000E+06	1.50000E+07
SG3N	1	1	5	1.0000E-03	1.22000E+07	1.50000E+07
ST	2	6	5	0.0	--	2.00000E+00
STD	0	3	1	--	--	--
STGF	3	8	55	5.0000E+01	--	2.50000E+05
SGNC	1	1	FOR	70 ENERGIES BETWEEN	1.000000E+03 EV AND	1.500000E+07 EV
SGIZ	1	1	FOR	20 EXCITED LEVELS		

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
4.30000E+04	35	1.0000E-03	4.99000E+04	1.50000E+06
1.42000E+05	23	1.0000E-03	2.47000E+05	1.50000E+06
2.94000E+05	23	1.0000E-03	5.50000E+05	1.50000E+06
5.97000E+05	21	1.0000E-03	6.49000E+05	1.50000E+06
6.49000E+05	19	1.0000E-03	7.05000E+05	1.50000E+06
7.42000E+05	18	1.0000E-03	8.61000E+05	1.50000E+06
8.61000E+05	17	1.0000E-03	9.00000E+05	1.50000E+06
9.00000E+05	15	1.0000E-03	9.38000E+05	1.50000E+06
9.38000E+05	13	1.0000E-03	9.59000E+05	1.50000E+06
9.59000E+05	14	1.0000E-03	1.00200E+06	1.50000E+06
1.00200E+06	13	1.0000E-03	1.03100E+06	1.50000E+06
1.03100E+06	11	1.0000E-03	1.03800E+06	1.50000E+06
1.03800E+06	11	1.0000E-03	1.09100E+06	1.50000E+06
1.09100E+06	10	1.0000E-03	1.11600E+06	1.50000E+06
1.11600E+06	5	1.0000E-03	1.41100E+06	1.50000E+06
1.13700E+06	8	1.0000E-03	1.16100E+06	1.50000E+06
1.16100E+06	4	1.0000E-03	1.41100E+06	1.50000E+06
1.30800E+06	4	1.0000E-03	1.43800E+06	1.50000E+06
1.41100E+06	4	1.0000E-03	1.43800E+06	1.50000E+06
1.43800E+06	3	1.0000E-03	1.50000E+06	1.50000E+06

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* PU241    *
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	54	--	--	--
ALPHA	1	1	2128	1.0000E-03	--	1.50000E+07
CHICR	1	3	2	1.0000E-03	--	1.50000E+07
ETA	1	1	818	1.0000E-03	--	1.50000E+07
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	54	1.0000E-03	--	1.50000E+07
NUE	1	1	2	1.0000E-03	--	1.50000E+07
PLNUE	0	4	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	123	2.6000E-01	--	1.60500E+02
SGA	1	1	3910	1.0000E-03	--	1.50000E+07
SGF	1	1	3869	1.0000E-03	--	1.50000E+07
SGG	1	1	4326	1.0000E-03	--	1.50000E+07
SGI	1	1	48	1.0000E-03	4.99000E+04	1.50000E+07
SGN	1	1	1582	1.0000E-03	--	1.50000E+07
SGT	1	1	3563	1.0000E-03	--	1.50000E+07
SGTR	1	1	3251	1.0000E-03	--	1.50000E+07
SG2N	1	1	16	1.0000E-03	6.07000E+06	1.50000E+07
SG3N	1	1	7	1.0000E-03	1.22000E+07	1.50000E+07
ST	2	6	6	0.0	--	1.00000E+00
STD	0	3	1	--	--	--
STGF	3	8	66	1.0000E+02	--	2.15000E+05
SGNC	1	1	FOR 72 ENERGIES BETWEEN 9.999997E+01 EV AND 1.500000E+07 EV			
SGIZ	1	1	FOR 19 EXCITED LEVELS			

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
4.00000E+04	25	1.0000E-03	4.99000E+04	1.00000E+06
9.20000E+04	24	1.0000E-03	1.00000E+05	1.00000E+06
1.63000E+05	22	1.0000E-03	1.67000E+05	1.00000E+06
1.67000E+05	17	1.0000E-03	1.72000E+05	1.00000E+06
1.69000E+05	19	1.0000E-03	1.72000E+05	1.00000E+06
1.72000E+05	18	1.0000E-03	2.00000E+05	1.00000E+06
2.30000E+05	17	1.0000E-03	2.35000E+05	1.00000E+06
2.35000E+05	14	1.0000E-03	2.44000E+05	1.00000E+06
2.35100E+05	13	1.0000E-03	2.96000E+05	1.00000E+06
2.44000E+05	14	1.0000E-03	2.96000E+05	1.00000E+06
2.96000E+05	13	1.0000E-03	3.34000E+05	1.00000E+06
3.34000E+05	13	1.0000E-03	4.00000E+05	1.00000E+06
4.44000E+05	11	1.0000E-03	4.99000E+05	1.00000E+06
4.99000E+05	10	1.0000E-03	5.68000E+05	1.00000E+06
5.68000E+05	8	1.0000E-03	8.09000E+05	1.00000E+06
8.09000E+05	7	1.0000E-03	8.35000E+05	1.00000E+06
8.35000E+05	6	1.0000E-03	8.75000E+05	1.00000E+06
8.75000E+05	5	1.0000E-03	9.31000E+05	1.00000E+06
9.31000E+05	4	1.0000E-03	9.94000E+05	1.00000E+06

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* PU242    *
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	36	--	--	--
CHICR	1	3	2	1.0000E-03	--	1.50000E+07
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	53	1.0000E-03	--	1.50000E+07
NUE	1	1	2	1.0000E-03	--	1.50000E+07
PLNUE	0	4	1	--	--	--
RANGRES	0	4	1	--	--	--
RES	3	8	37	2.6500E+00	--	4.94800E+02
SGA	1	1	4366	1.0000E-03	--	1.50000E+07
SGF	1	1	2829	1.0000E-03	5.00000E-01	1.50000E+07
SGG	1	1	4480	1.0000E-03	--	1.50000E+07
SGI	1	1	52	1.0000E-03	4.99000E+04	1.50000E+07
SGN	1	1	2151	1.0000E-03	--	1.50000E+07
SGT	1	1	2498	1.0000E-03	--	1.50000E+07
SG2N	1	1	12	1.0000E-03	6.70000E+06	1.50000E+07
SG3N	1	1	5	1.0000E-03	1.22000E+07	1.50000E+07
ST	2	6	5	0.0	--	2.00000E+00
STD	0	3	1	--	--	--
STGF	3	8	55	5.0000E+01	--	2.50000E+05
SGNC	1	1	FOR 74 ENERGIES BETWEEN 2.000000E+02 EV AND 1.500000E+07 EV
SGIZ	1	1	FOR 17 EXCITED LEVELS

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
4.40000E+04	33	1.0000E+03	4.99000E+04	1.50000E+06
1.46000E+05	23	1.0000E-03	2.47000E+05	1.50000E+06
2.94000E+05	23	1.0000E-03	5.50000E+05	1.50000E+06
5.97000E+05	20	1.0000E-03	6.49000E+05	1.50000E+06
6.49000E+05	18	1.0000E-03	7.05000E+05	1.50000E+06
7.42000E+05	17	1.0000E-03	8.61000E+05	1.50000E+06
9.56000E+05	12	1.0000E-03	9.95000E+05	1.50000E+06
9.95000E+05	12	1.0000E-03	1.00200E+06	1.50000E+06
1.00200E+06	11	1.0000E-03	1.03100E+06	1.50000E+06
1.03100E+06	10	1.0000E-03	1.03800E+06	1.50000E+06
1.03800E+06	9	1.0000E-03	1.09100E+06	1.50000E+06
1.09100E+06	8	1.0000E-03	1.10700E+06	1.50000E+06
1.10700E+06	7	1.0000E-03	1.16100E+06	1.50000E+06
1.16100E+06	5	1.0000E-03	1.41100E+06	1.50000E+06
1.30800E+06	5	1.0000E-03	1.41100E+06	1.50000E+06
1.41100E+06	4	1.0000E-03	1.43800E+06	1.50000E+06
1.43800E+06	3	1.0000E-03	1.50000E+06	1.50000E+06

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* AM241   *
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	16	1.0000E-03	--	1.50000E+07
NUE	1	1	2	1.0000E-03	--	1.50000E+07
RES	3	8	189	-4.2088E-01	--	1.49141E+02
SGA	1	1	7749	1.0000E-03	--	1.50630E+07
SGF	1	1	6057	1.0000E-03	--	1.50600E+07
SGG	1	1	7784	1.0000E-03	--	1.50000E+07
SGI	1	1	35	1.0000E-03	4.50000E+04	1.50000E+07
SGN	1	1	2913	1.0000E-03	--	1.50630E+07
SGT	1	1	6206	1.0000E-03	--	1.50630E+07
SG2N	1	1	12	1.0000E-03	7.00000E+06	1.50000E+07
SG3N	1	1	5	1.0000E-03	1.30000E+07	1.50000E+07
ST	2	6	6	0.0	--	1.00000E+00
STD	0	3	1	--	--	--
STGF	3	8	36	1.0000E+02	--	2.15000E+05
SGNC	1	1	FOR	17 ENERGIES BETWEEN	1.000000E+03 EV AND	1.500000E+07 EV
SGIZ	1	1	FOR	12 EXCITED LEVELS		

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
4.11800E+04	28	1.0000E-03	4.50000E+04	5.00000E+06
9.36500E+04	22	1.0000E-03	1.00000E+05	5.00000E+06
1.58000E+05	18	1.0000E-03	1.70000E+05	5.00000E+06
2.05880E+05	15	1.0000E-03	3.00000E+05	5.00000E+06
2.34000E+05	16	1.0000E-03	3.00000E+05	6.00000E+06
2.35000E+05	15	1.0000E-03	3.00000E+05	5.00000E+06
2.72000E+05	10	1.0000E-03	3.00000E+05	1.50000E+06
3.20000E+05	14	1.0000E-03	4.00000E+05	5.00000E+06
3.36000E+05	14	1.0000E-03	4.00000E+05	5.00000E+06
3.80000E+05	14	1.0000E-03	4.00000E+05	5.00000E+06
4.71810E+05	13	1.0000E-03	5.00000E+05	5.00000E+06
5.04880E+05	12	1.0000E-03	6.00000E+05	5.00000E+06

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* AM242    *
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	17	1.0000E-03	--	1.50000E+07
NUE	1	1	2	1.0000E-03	--	1.50000E+07
RES	3	8	7	-3.2305E+00	--	3.25000E+00
SGA	1	1	230	1.0000E-03	--	1.50000E+07
SGF	1	1	232	1.0000E-03	--	1.50000E+07
SGG	1	1	132	1.0000E-03	--	1.50000E+07
SGI	1	1	39	1.0000E-03	3.00000E+04	1.50000E+07
SGN	1	1	88	1.0000E-03	--	1.50000E+07
SGT	1	1	124	1.0000E-03	--	1.50000E+07
SG2N	1	1	9	1.0000E-03	6.00000E+06	1.50000E+07
SG3N	1	1	5	1.0000E-03	1.30000E+07	1.50000E+07
ST	2	6	6	0.0	--	1.00000E+00
STD	0	3	1	--	--	--
STGF	3	8	24	5.0000E+00	--	1.00000E+05
SGNC	1	1	FOR 17 ENERGIES BETWEEN	1.000000E+03 EV AND	1.500000E+07 EV
SGIZ	1	1	FOR 13 EXCITED LEVELS		

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
2.50000E+04	34	1.0000E-03	3.00000E+04	1.00000E+07
6.40000E+04	30	1.0000E-03	8.00000E+04	1.00000E+07
9.90000E+04	29	1.0000E-03	1.00000E+05	1.00000E+07
9.91000E+04	29	1.0000E-03	1.00000E+05	1.00000E+07
1.41000E+05	27	1.0000E-03	1.93000E+05	1.00000E+07
1.93000E+05	26	1.0000E-03	2.00000E+05	1.00000E+07
2.14000E+05	24	1.0000E-03	2.40000E+05	1.00000E+07
2.39000E+05	24	1.0000E-03	2.40000E+05	1.00000E+07
2.41000E+05	23	1.0000E-03	2.80000E+05	1.00000E+07
2.76000E+05	23	1.0000E-03	2.80000E+05	1.00000E+07
2.92000E+05	22	1.0000E-03	3.00000E+05	1.00000E+07
3.23000E+05	21	1.0000E-03	4.00000E+05	1.00000E+07
3.61000E+05	21	1.0000E-03	4.00000E+05	1.00000E+07

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*  AM243  *
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	36	1.0000E-03	--	1.50000E+07
NUE	1	1	2	1.0000E-03	--	1.50000E+07
RES	3	8	220	-9.2200E-02	--	2.49700E+02
SGA	1	1	10760	1.0000E-03	--	1.50000E+07
SGF	1	1	59	1.0000E-03	--	1.50000E+07
SGG	1	1	10844	1.0000E-03	--	1.50000E+07
SGI	1	1	29	1.0000E-03	5.00000E+04	1.50000E+07
SGN	1	1	5182	1.0000E-03	--	1.50000E+07
SGT	1	1	8522	1.0000E-03	--	1.50000E+07
SG2N	1	1	8	1.0000E-03	7.00000E+06	1.50000E+07
SG3N	1	1	5	1.0000E-03	1.30000E+07	1.50000E+07
ST	2	6	6	0.0	--	1.00000E+00
STD	0	3	1	--	--	--
STGF	3	8	42	2.5000E+02	--	2.50000E+05
SGNC	1	1	FOR 37 ENERGIES BETWEEN 1.000000E+04 EV AND 1.500000E+07 EV		
SGIZ	1	1	FOR 15 EXCITED LEVELS		

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
4.22000E+04	26	1.0000E-03	5.00000E+04	8.00000E+06
8.40000E+04	22	1.0000E-03	1.00000E+05	8.00000E+06
9.64000E+04	22	1.0000E-03	1.00000E+05	8.00000E+06
1.09300E+05	21	1.0000E-03	1.50000E+05	8.00000E+06
1.46000E+05	21	1.0000E-03	1.50000E+05	8.00000E+06
1.89300E+05	20	1.0000E-03	2.00000E+05	8.00000E+06
2.44000E+05	19	1.0000E-03	3.00000E+05	8.00000E+06
2.66000E+05	19	1.0000E-03	3.00000E+05	8.00000E+06
3.00000E+05	18	1.0000E-03	4.00000E+05	8.00000E+06
3.45000E+05	18	1.0000E-03	4.00000E+05	8.00000E+06
3.83000E+05	18	1.0000E-03	4.00000E+05	8.00000E+06
4.07000E+05	17	1.0000E-03	5.00000E+05	8.00000E+06
4.23000E+05	17	1.0000E-03	5.00000E+05	8.00000E+06
4.65700E+05	17	1.0000E-03	5.00000E+05	2.48703E+02
4.66000E+05	17	1.0000E-03	5.00000E+05	8.00000E+06

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* CM244   *
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
AASTATUS	1	1	18	--	--	--
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	90	1.0000E-03	--	1.50000E+07
NUE	1	1	90	1.0000E-03	--	1.50000E+07
PLNUE	0	4	1	--	--	--
RES	3	8	69	-3.2710E+00	--	9.71500E+02
SGA	1	1	5553	1.0000E-03	--	1.50000E+07
SGF	1	1	4309	1.0000E-03	--	1.50000E+07
SGG	1	1	5556	1.0000E-03	--	1.50000E+07
SGI	1	1	73	1.0000E-03	5.00000E+04	1.50000E+07
SGN	1	1	4334	1.0000E-03	--	1.50000E+07
SGT	1	1	3884	1.0000E-03	--	1.50000E+07
SG2N	1	1	19	1.0000E-03	7.60000E+06	1.50000E+07
SG3N	1	1	8	1.0000E-03	1.27000E+07	1.50000E+07
ST	2	6	5	0.0	--	2.00000E+00
STD	0	3	1	--	--	--
STGF	3	8	35	4.6000E+02	--	2.15000E+05
SGNC	1	1	FOR 89 ENERGIES BETWEEN 3.999998E+02 EV AND 1.500000E+07 EV			
SGIZ	1	1	FOR 22 EXCITED LEVELS			

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
4.29000E+04	29	1.0000E-03	5.00000E+04	1.20000E+06
1.42300E+05	22	1.0000E-03	2.00000E+05	1.20000E+06
2.96000E+05	18	1.0000E-03	6.00000E+05	1.20000E+06
6.80000E+05	16	1.0000E-03	7.35000E+05	1.20000E+06
7.32000E+05	15	1.0000E-03	8.30000E+05	1.20000E+06
8.27000E+05	14	1.0000E-03	9.30000E+05	1.20000E+06
9.27000E+05	13	1.0000E-03	9.34000E+05	1.20000E+06
9.31000E+05	12	1.0000E-03	9.53000E+05	1.20000E+06
9.50000E+05	11	1.0000E-03	9.74000E+05	1.20000E+06
9.70000E+05	10	1.0000E-03	9.97000E+05	1.20000E+06
9.93000E+05	9	1.0000E-03	1.00000E+06	1.20000E+06
9.97500E+05	8	1.0000E-03	1.04200E+06	1.20000E+06
9.98300E+05	8	1.0000E-03	1.04200E+06	1.20000E+06
1.03800E+06	7	1.0000E-03	1.05900E+06	1.20000E+06
1.05500E+06	6	1.0000E-03	1.11000E+06	1.20000E+06
1.05950E+06	5	1.0000E-03	1.11000E+06	1.20000E+06
1.06030E+06	5	1.0000E-03	1.11000E+06	1.20000E+06
1.10600E+06	4	1.0000E-03	1.17000E+06	1.20000E+06
1.12700E+06	4	1.0000E-03	1.17000E+06	1.20000E+06
1.12900E+06	4	1.0000E-03	1.17000E+06	1.20000E+06
1.16800E+06	4	1.0000E-03	1.20000E+06	1.20000E+06
1.18700E+06	3	1.0000E-03	1.20000E+06	1.20000E+06

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*  CM246   *
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ALPHA	1	1	96	2.0000E+02	--	1.50000E+07
ETA	1	1	96	2.0000E+02	--	1.50000E+07
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	96	2.0000E+02	--	1.50000E+07
NUE	1	1	96	2.0000E+02	--	1.50000E+07
PLNUE	0	4	1	--	--	--
RES	3	8	10	4.3150E+00	--	3.81100E+02
SGA	1	1	96	2.0000E+02	--	1.50000E+07
SGF	1	1	96	2.0000E+02	--	1.50000E+07
SGG	1	1	96	2.0000E+02	--	1.50000E+07
SGI	1	1	76	1.0000E-03	5.00000E+04	1.50000E+07
SGN	1	1	96	2.0000E+02	--	1.50000E+07
SGT	1	1	96	2.0000E+02	--	1.50000E+07
SGTR	1	1	96	2.0000E+02	--	1.50000E+07
SGX	1	1	96	2.0000E+02	--	1.50000E+07
SG2N	1	1	21	1.0000E-03	7.00000E+06	1.50000E+07
SG3N	1	1	9	1.0000E-03	1.24000E+07	1.50000E+07
ST	2	6	3	0.0	--	1.00000E+00
STD	0	3	1	--	--	--
STGF	3	8	57	2.0000E+02	--	5.00000E+04
SGNC	1	1	FOR	96 ENERGIES BETWEEN	2.000000E+02 EV AND	1.500000E+07 EV
SGIZ	1	1	FOR	24 EXCITED LEVELS		

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
4.28000E+04	37	4.2800E+04	5.00000E+04	1.50000E+06
1.42000E+05	29	1.4200E+05	2.00000E+05	1.50000E+06
2.96000E+05	27	2.9700E+05	6.00000E+05	1.50000E+06
5.00000E+05	25	5.0200E+05	8.79000E+05	1.50000E+06
8.42000E+05	21	8.4500E+05	8.79000E+05	1.50000E+06
8.76000E+05	20	8.7900E+05	9.26000E+05	1.50000E+06
9.23000E+05	19	9.2600E+05	9.85000E+05	1.50000E+06
9.81000E+05	18	9.8500E+05	1.05600E+06	1.50000E+06
1.05200E+06	17	1.0560E+06	1.17000E+06	1.50000E+06
1.07900E+06	16	1.0830E+06	1.10900E+06	1.50000E+06
1.10500E+06	15	1.1090E+06	1.12800E+06	1.50000E+06
1.12400E+06	14	1.1280E+06	1.13200E+06	1.50000E+06
1.12800E+06	14	1.1280E+06	1.13300E+06	1.50000E+06
1.12900E+06	13	1.1320E+06	1.18000E+06	1.50000E+06
1.16600E+06	11	1.1700E+06	1.18000E+06	1.50000E+06
1.17600E+06	10	1.1800E+06	1.18300E+06	1.50000E+06
1.17900E+06	10	1.1800E+06	1.25500E+06	1.50000E+06
1.20800E+06	8	1.2120E+06	1.25500E+06	1.50000E+06
1.25000E+06	7	1.2550E+06	1.30500E+06	1.50000E+06
1.30000E+06	6	1.3050E+06	1.35400E+06	1.50000E+06
1.34900E+06	5	1.3540E+06	1.37200E+06	1.50000E+06
1.36700E+06	4	1.3720E+06	1.45700E+06	1.50000E+06
1.45200E+06	3	1.4570E+06	1.48400E+06	1.50000E+06
1.47800E+06	2	1.4840E+06	1.50000E+06	1.50000E+06

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* CM248    *
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TYPE	ARGUMENTS	FUNCT.-VALUES	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
ALPHA	1	1	80	2.0000E+03	--	1.50000E+07
ETA	1	1	80	2.0000E+03	--	1.50000E+07
ISOT1	0	3	1	--	--	--
ISOT2	0	3	1	--	--	--
MUEL	1	1	80	2.0000E+03	--	1.50000E+07
NUE	1	1	80	2.0000E+03	--	1.50000E+07
PLNUE	0	4	1	--	--	--
RES	3	8	47	-7.4000E+00	--	2.39100E+03
SGA	1	1	80	2.0000E+03	--	1.50000E+07
SGF	1	1	80	2.0000E+03	--	1.50000E+07
SGG	1	1	80	2.0000E+03	--	1.50000E+07
SGI	1	1	69	1.0000E-03	5.00000E+04	1.50000E+07
SGN	1	1	80	2.0000E+03	--	1.50000E+07
SGT	1	1	80	2.0000E+03	--	1.50000E+07
SGTR	1	1	80	2.0000E+03	--	1.50000E+07
SGX	1	1	80	2.0000E+03	--	1.50000E+07
SG2N	1	1	21	1.0000E-03	7.00000E+06	1.50000E+07
SG3N	1	1	10	1.0000E-03	1.20000E+07	1.50000E+07
ST	2	6	3	0.0	--	1.00000E+00
STD	0	3	1	--	--	--
STGF	3	8	57	2.0000E+02	--	5.00000E+04
SGNC	1	1	FOR	80 ENERGIES BETWEEN	2.000000E+03 EV AND	1.500000E+07 EV
SGIZ	1	1	FOR	14 EXCITED LEVELS		

LEVEL	DATA SETS	FIRST ARGUM.	THRESHOLD	LAST ARGUM.
4.34000E+04	28	4.3600E+04	5.00000E+04	1.32000E+06
1.43000E+05	21	1.4400E+05	2.00000E+05	1.32000E+06
2.98000E+05	19	2.9900E+05	6.00000E+05	1.32000E+06
5.04000E+05	17	5.0600E+05	1.05400E+06	1.32000E+06
1.04900E+06	11	1.0530E+06	1.05400E+06	1.32000E+06
1.05000E+06	11	1.0530E+06	1.08800E+06	1.32000E+06
1.08400E+06	9	1.0880E+06	1.09800E+06	1.32000E+06
1.09400E+06	8	1.0980E+06	1.13000E+06	1.32000E+06
1.12600E+06	7	1.1300E+06	1.14800E+06	1.32000E+06
1.14300E+06	6	1.1480E+06	1.17700E+06	1.32000E+06
1.17200E+06	5	1.1770E+06	1.30700E+06	1.32000E+06
1.22200E+06	4	1.2270E+06	1.24000E+06	1.32000E+06
1.23500E+06	3	1.2400E+06	1.30700E+06	1.32000E+06
1.30200E+06	2	1.3070E+06	1.32000E+06	1.32000E+06

Table 3: Nomenclature of data types on KEDAK

Name of data type	Further names	Arguments	Functional values
AASTATUS	–	1	1 bibliographic information giving data types and energy regions of recent evaluations. (1)
ISØT 1	–	–	1. Atomic (Isotopic) weigth (A) 2. Atomic number (Z) 3. Nuclear spin of ground state (I)
ISØT 2	–	–	1. $\lambda \cdot \sqrt{E} = h \,/\, \sqrt{2m_n} \cdot \dfrac{A+m_n}{A}$ = reduced neutron wave length $\left[eV^{1/2} \, b^{\,1/2}\right]$ 2. R = nuclear radius $\left[b^{1/2}\right]$ 3. E_B= binding energy of the last neutron in compound nucleus $\left[eV\right]$
ISØT 3	–	Isotopic weight	Isotopic abundance $\left[\%\right]$
CHICR	–	1. Neutron incident energy	1. c 2. a } Parameters of the Watt–Cranberg fission spectrum 3. b $\chi(E) = c \cdot \exp(-aE)\sinh(\sqrt{bE})$ $c = 2a\sqrt{\dfrac{a}{\pi b}} \cdot \exp(-b/4a)$ The mean energy of fission neutrons is given by $\overline{E} = \dfrac{1}{a}\left(\dfrac{3}{2} + \dfrac{1}{4}\dfrac{b}{a}\right)$ eV
CHIF	–	neutron out-going energy	energy spectrum of promt fission neutrons (thermal fission)
CHIFD	–	"	energy spectrum of delayed fission neutrons (thermal fission)
CHIFZ	E_o	"	energy spectrum of prompt fission neutrons at the neutron incident energy E_o
CHIFDZ	E_o	"	energy spectrum of delayed fission neutrons at the neutron incident energy E_o
CHIIZC	E_o	"	energy spectrum of inelastically scattered neutrons at the neutron incident energy E_o
CHI2N	E_o	"	energy spectrum of the two neutrons emitted in the (n,2n) process at the neutron incident energy E_o

Table 3 cont.

Name of data type	Further names	Arguments	Functional values
CHI3N	E_0	"	energy spectrum of the three neutrons emitted in the (n,3n) process at the neutron incident energy E_0
RANGRES	–	–	1. E_L- lower ⎱ energy boundaries of the region in which resolved resonance parameters given under "RES" are valid. 2. E_U- upper ⎰ 3. number of resolved resonances given by "RES" 4. flag which indicates whether resolved resonance parameters should preferable be taken for group constant calculations or pointwise given cross section values. It may have the following values. 2. – cross section values ⎱ should be 1. – resolved resonance ⎰ taken parameters 0. – no preference can be recommended
RES	–	1. Resonance energy 2. Neutron orbital angular momentum(L) 3. Compound nucleus spin (J)	1. $g_J = (2J+1)/(2(2I+1))\cdot$abundance 2. total width Γ 3. neutron width Γ_n 4. capture width Γ_γ 5. fission width Γ_f 6. (n,p)–width Γ_p 7. (n,α)–width Γ_α 8. (n,n')–width $\Gamma_{n'}$
ST	–	1. L 2. J	1. average capture width $\overline{\Gamma}_\gamma$ 2. average level spacing $\overline{D}$ 3. average reduced neutron width $\overline{\Gamma}_n^{\ell}$

Table 3 cont.

Name of data type	Further names	Arguments	Functional values
			4. strength function $S_\ell = \dfrac{<\Gamma_n^\ell>_j}{(\nu_n)_{\ell j}<D>_j}$
			5. number of exit channels in fission ν_f
			6. number of exit channels in neutron elastic scattering $(\nu_n)_{\ell J}$
STD	–	–	1. average observed level spacing
			2. a level density parameter
			3. $2\sigma^2$ spin cut-off parameter
STGF	–	1. neutron incident energy	1. number of exit channels in fission ν_f
		2. L	2. average fission width $\overline{\Gamma_f}$ for the number of exit channels ν_f
		3. J	3. average capture width $\overline{\Gamma_\gamma}$
			4. average neutron width $\overline{\Gamma_n}$
			5. S_f ⎫
			6. S_γ ⎬ statistical fluctuation factors
			7. R_f ⎪ Definition see reference 5
			8. R_γ ⎭
ALPHA	–	neutron incident energy	ratio of capture to fission cross section
ETA	–	"	average number of fission neutrons per neutron absorption
MUEL	–	"	average cosine of the elastic scattering angle in the laboratory system $\overline{\cos\theta_L} = \overline{\mu_L}$
NUE	–	"	average number of fission neutrons
NUEP	–	"	average number of prompt fission neutrons

Table 3 cont.

Name of data type	Further names	Arguments	Functional values
PLNUE	–	–	1. ν_o 2. ν_1 3. ν_2 4. ν_3 where $\nu = \nu_o + \nu_1 E + \nu_2 E^2 + \nu_3 E^3$ average total number of fission neutrons
SGA	–	neutron incident energy	absorption cross section
SGALP	–	"	cross section for the (n,α)-process
SGD	–	"	" " " " (n,d)- "
SGP	–	"	" " " " (n,p)- "
SGF	–	"	fission cross section
SGG	–	"	cross section for the (n,γ)-process
SGHE3	–	"	" " " " (n,He^3)- "
SGH3	–	"	" " " " (n,H^3)- "
SGI	–	"	total inelastic cross section
SGIA	–	"	cross section for the $(n,n'\alpha)$-process
SGI2A	–	"	" " " " $(n,n'2\alpha)$- "
SGI3A	–	"	" " " " $(n,n'3\alpha)$- "
SGIP	–	"	" " " " $(n,n'p)$- "
SGIZ	E_i	"	inelastic cross section for excitation of rest nucleus level E_i
SGIZC	–	"	inelastic scattering cross section to the continuum
SGN	–	"	elastic scattering cross section
SGT	–	"	total cross section
SGTR	–	"	transport cross section
SGX	–	"	non-elastic cross section
SG2HE	–	"	cross section for the $(n,2\alpha)$-process
SG2N	–	"	" " " " $(n,2n)$-process

Table 3 cont.

Name of data type	Further names	Arguments	Functional values
SG3N	–	neutron incident energy	cross section for the (n,3n)-process
SG2NA	–	"	" " " " (n,2nα)-process
SG3NA	–	"	" " " " (n,3nα)-process
SGNL	E_O (2)	cosine of scattering angle	differential elastic scattering cross section at the neutron incident energy E_O in the laboratory system
SGNC	E_O	"	differential elastic scattering cross section at the neutron incident energy E_O in the center-of-mass system (normalised to 1)
SGIL	E_O	"	differential inelastic scattering cross section at the neutron incident energy E_O in the laboratory system
SGIC	E_O	"	differential inelastic scattering cross section at the neutron incident energy E_O in the center-of-mass system
SGILZ	1. E_i 2. E_O	"	differential inelastic scattering cross section for excitation of the rest nucleus level E_i at the neutron incident energy E_O in the laboratory system
SGICZ	1. E_i 2. E_O	"	differential inelastic scattering cross section for excitation of the rest nucleus level E_i at the neutron incident energy E_O in the center-of-mass system
SGNIL	1. E_2 2. E_O	"	differential cross section for elastic and inelastic scattering at the neutron incident energy E_O to neutron outgoing energies between E_O and E_2 in the laboratory system
SGNIC	1. E_2 2. E_O	"	differential cross section for elastic and inelastic scattering at the neutron incident energy E_O to neutron outgoing energies between E_O and E_2 in the center-of-mass system

Table 3 cont.

Name of data type	Further names	Arguments	Functional values
LEGNL	1. E_O 2. order L_m	L	coefficient f_L in the Legendre-polynomial expansion of the differential elastic scattering cross section $$\sigma_n\,(\theta) = \frac{\sigma_n}{4\pi} \sum_{L=o}^{L_m} (2L+1)\ f_L\ (E)\ P_L\ (\cos\theta)$$ in the laboratory system
LEGNC	1. E_O 2. order L_m	L	coefficient f_L in the Legendre-polynomial expansion of the differential elastic scattering cross section $$\sigma_n\,(\theta) = \frac{\sigma_n}{4\pi} \sum_{L=o}^{L_m} (2L+1)\ f_L\ (E)\ P_L\ (\cos\theta)$$ in the center-of-mass system
LEGIL	1. E_O 2. order L_m	L	coefficient f_L^i in the Legendre-polynomial expansion of the differential inelastic scattering cross section $$\sigma_{n'}\,(\theta) = \frac{\sigma_{n'}}{4\pi} \sum_{L=o}^{L_m} (2L+1)\ f_L^i\ (E)\ P_L\ (\cos\theta)$$ in the laboratory system
LEGIC	1. E_O 2. order L_m	L	coefficient f_L^i in the Legendre-polynomial expansion of the differential inelastic scattering cross section $$\sigma_{n'}\,(\theta) = \frac{\sigma_{n'}}{4\pi} \sum_{L=o}^{L_m} (2L+1)\ f_L^i\ (E)\ P_L\ (\cos\theta)$$ in the center-of-mass system
LEGILZ	1. E_i 2. E_O 3. order L_m	L	coefficient f_L^i in the Legendre-polynomial expansion of the differential inelastic scattering cross section for excitation of the rest nucleus level E_i $$\sigma_{n'}^{E_i}\,(\theta) = \frac{\sigma_{n'}}{4\pi} \sum_{L=o}^{L_m} (2L+1)\ f_L^i\ (E)\ P_L\ (\cos\theta)$$ in the laboratory system

Table 3 cont.

Name of data type	Further names	Arguments	Functional values
LEGICZ	1. E_i 2. E_o 3. order L_m	L	coefficient f_L^i in the Legendre-polynomial expansion of the differential inelastic scattering cross section for excitation of the rest nucleus level E_i $$\sigma_{n'}^{E_i}(\theta) = \frac{\sigma_{n'}}{4\pi} \sum_{L=o}^{L_m} (2L+1)\ f_L^i\ (E)\ P_L\ (\cos\theta)$$ in the center-of-mass system
LGNIL	1. E_2 2. E_o 3. order L_m	L	coefficient f_L^{o2} in the Legendre-polynomial expansion of the differential cross section for elastic and inelastic scattering at the neutron incident energy E_o to neutron outgoing energies between E_o and E_2 $$\sigma_{n+n'}^{o2}(\theta) = \frac{\sigma_{n+n'}^{o2}}{4\pi} \sum_{L=o}^{L_m} (2L+1)\ f_L^{o2}\ (E)\ P_L\ (\cos\theta)$$ in the laboratory system
LGNIC	1. E_2 2. E_o 3. order L_m	L	coefficient f_L^{o2} in the Legendre-polynomial expansion of the differential cross section for elastic and inelastic scattering at the neutron incident energy E_o to neutron outgoing energies between E_o and E_2 $$\sigma_{n+n'}^{o2}(\theta) = \frac{\sigma_{n+n'}^{o2}}{4\pi} \sum_{L=o}^{L_m} (2L+1)\ f_L^{o2}\ (E)\ P_L\ (\cos\theta)$$ in the center-of-mass system

			parametric representation of energy spectra at incident neutron energy E_o
SEDIC	E_o	K-identification number for the model used for description:	of neutrons inelastically scattered to a continuum of levels
SED2N	"		of the two neutrons emitted by the (n,2n) process
SED3N	"		of the three neutrons emitted by the (n,3n) process
SEDF	"		of fission neutrons
SEDFP	"		of prompt fission neutrons
SEDFD	"		of delayed fission neutrons

Table 3 cont.

Name of data type	Further names	Arguments	Functional values

K=1 Evaporation spectrum

$$\chi(E') = \frac{E'*\exp(E'/\theta)}{\theta^2 * \left[1-\exp(-\frac{E_o-U}{\theta})*(1+\frac{E_o-U}{\theta})\right]}$$

K=2 Maxwellian spectrum

$$(E') = \frac{\sqrt{E'}*\exp(-E'/\theta)}{\theta^{3/2}*\left[\sqrt{\frac{\pi}{2}}*\mathrm{erf}(\sqrt{\frac{E_o-U}{\theta}}) - \sqrt{\frac{E_o-U}{\theta}}*\exp(-\frac{E_o-U}{\theta})\right]}$$

K=3 Watt-Cranberg spectrum
See formula for CHICR

K=4 Excitation of discrete levels

$$\chi(E) = \delta\left[E' - \frac{A^2+1}{(A+1)^2}E_o + \frac{A}{A+1}*EC\right]$$

3 functional values:

1. p - fraction of the spectrum of type K to the total energy distribution

2. θ (nuclear temperature) -
       for K = 1,2
   a (spectrum parameter) -
       for K = 3
   EC (level excitation energy) -
       for K = 4

3. U - upper limit for the final neutron energy - for K = 1,2
   $0 \le E' \le E_o - U$

   or b (spectrum parameter) -
       for K = 3
   or A (atomic weight) - for K = 4

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(1) The data items of AASTATUS are only formally divided into argument and functional value. They contain the indicated text in successive order.

(2) E_o for this and all pertinent further data types in the laboratory system. This is also true for E_2.