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THERMAL-NEUTRON CAPTURE GAMMA-RAYS

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Abstract: This document describes format and contents of a nuclear data library on magnetic tape which lists prompt gamma-rays from thermal-neutron capture evaluated by J.K. Tuli in 1982 and updated in 1988. The magnetic tape is available, costfree, from the IAEA Nuclear Data Section.

(H.D. Lemmel, ed.)
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Thermal-neutron capture gamma-rays

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The original version of this data file was published in the report BNL-NCS-51647 (Jan. 1983). The present file contains an update made in 1988.

The data file is an EBCDIC tabulation not requiring any software. The file is given in two sorts. File 1 is sorted by gamma-ray energy. File 2 is sorted by element and isotope first and then by gamma-ray energy.

File 1 contains the following data columns:

1. the gamma-ray energy, ranging from 0.1 keV up to 11447. keV;
2. the gamma-ray intensity in percent of the strongest gamma-ray from the same nuclide;
3. the gamma-emitting nucleus after thermal-neutron capture; included are mass-numbers from A=45 and up;
4. the energy in keV of the strongest gamma-ray emitted by the same nuclide.

File 2 contains the same information in alphabetic sort of the element symbols.

The data included in this file were retrieved from ENSDF, a computer file of evaluated nuclear structure data, which is maintained by the US National Nuclear Data Center (NNDC) on behalf of the ENSDF network co-ordinated by the IAEA. The related mass-chain evaluations are published by NNDC in the journal Nuclear Data Sheets (Academic Press Inc., New York). The date of retrieval from ENSDF is 1988.

(H.D. Lemmel, ed.)

The size of the library is: File 1 = 37591 records, File 2 = 20317 records. The record length is 80.

Sample from the data file

E(g) (keV)	(%I(g))	Nucleus (Strongest g)	E(g) (keV)	(%I(g))	Nucleus (Strongest g)
1842.1	(0.4)	55Cr (6246.4)	1856.8		168Er (184.3)
1842.1		144Nd (696.5)	1857.0	(2.9)	158Gd (181.9)
1842.4	(0.4)	49Ti (1381.7)	1857.0		88Sr (1836.0)
1843.0	(0.5)	150Sm (333.9)	1857.1	(1.2)	149Nd (165.1)
1843.2	(0.9)	143Ce (4337.8)	1857.2		165Dy (2751.0)
1843.4	(6.2)	181Hf (206.4)	1857.4	(0.1)	200Hg (367.9)
1844.0	(0.3)	124Te (602.4)	1857.4	(6.3)	46Sc (227.8)
1844.6	(0.9)	74Ge (595.8)	1857.5	(1.7)	156Gd (199.2)
1844.8	(0.6)	168Er (184.3)	1858.1	(2.7)	174Yb (176.7)
1844.9	(0.5)	172Yb (5539.7)	1858.5	(0.3)	81Se (467.7)
1845.0	(2.0)	60Co (229.7)	1858.8	(0.6)	172Yb (5539.7)
1845.5	(0.6)	156Gd (199.2)	1859.0	(0.3)	74Ge (595.8)
1845.9	(2.8)	145Nd (852.8)	1859.0	(0.6)	150Sm (333.9)
1846.3	(1.1)	96Mo (778.3)	1859.6	(2.3)	103Ru (174.0)
1846.7	(0.8)	143Nd (742.1)	1859.9	(0.5)	190Os (186.7)
1847.2		165Dy (2751.0)	1860.4	(0.4)	200Hg (367.9)
1847.3	(4.6)	92Zr (934.5)	1861.0		177Lu (150.4)
1847.5		190Os (186.7)	1861.3	(0.3)	168Er (184.3)
1847.6	(3.2)	147Nd (314.7)	1862.4	(0.3)	168Er (184.3)
1847.9	(0.5)	98Mo (787.4)	1862.5	(2.4)	58Fe (810.5)
1848.3	(0.6)	168Er (184.3)	1862.7		146Nd (7110.8)
1848.4	(1.8)	77Se (238.9)	1863.9	(1.4)	149Nd (165.1)
1848.4	(2.1)	184W (111.2)	1864.7	(1.6)	158Gd (181.9)
1848.6	(3.2)	181Hf (206.4)	1864.8	(2.7)	82Br (29.1)
1848.8	(0.4)	178Hf (6112.4)	1864.8		180Hf (5572.4)
1849.3	(0.9)	82Br (29.1)	1865.0	(1.5)	70Ga (508.4)
1850.0	(0.8)	62Ni (1172.8)	1865.1	(1.0)	168Er (184.3)
1850.1	(0.9)	172Yb (5539.7)	1865.3	(1.3)	81Se (467.7)
1850.5	(0.6)	168Er (184.3)	1865.5	(2.8)	188Os (155.0)
1851.0	(0.9)	77Se (238.9)	1866.0	(0.1)	150Sm (333.9)
1851.1	(2.2)	147Nd (314.7)	1866.2	(0.2)	178Hf (6112.4)
1851.3	(0.2)	57Fe (7631.2)	1866.6		165Dy (2751.0)
1851.4	(0.8)	124Te (602.4)	1867.5		144Nd (696.5)
1851.4	(0.3)	156Gd (199.2)	1868.0	(0.5)	143Nd (742.1)
1851.6	(0.3)	80Br (37.1)	1869.4	(0.6)	98Mo (787.4)
1852.0	(1.0)	78Se (613.8)	1869.7	(3.7)	184W (111.2)
1852.3	(50.0)	121Sn (925.7)	1869.9	(5.1)	174Yb (176.7)
1852.4	(2.9)	143Nd (742.1)	1870.0	(0.8)	158Gd (181.9)
1852.7	(9.3)	60Co (229.7)	1870.0		177Lu (150.4)
1852.9	(0.6)	50Ti (1553.8)	1870.0	(0.2)	202Hg (439.5)
1853.0	(3.0)	76Se (559.1)	1870.1	(2.9)	46Sc (227.8)
1853.0		180Hf (5572.4)	1871.8	(0.2)	143Nd (742.1)
1853.0	(0.6)	202Hg (439.5)	1872.0	(1.2)	55Fe (9297.8)
1853.3		146Nd (7110.8)	1872.1	(1.8)	137Ce (434.0)