

^{99}Y IT decay **1985Me09**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli		NDS 145, 25 (2017)	1-Jul-2017

Parent: ^{99}Y : E=2141.70 22; $J^\pi=(17/2^+)$; $T_{1/2}=8.6\ \mu\text{s}$ 8; %IT decay=100.0

[Additional information 1.](#)

Activity produced by neutron-induced fission of ^{235}U . Measured E_γ , I_γ , X_γ , I(K x ray), $\gamma\gamma(t)$.

 ^{99}Y Levels

E(level)	J^π [†]	$T_{1/2}$	Comments
0.0	(5/2 ⁺)		
125.10 10	(7/2 ⁺)		
283.79 13	(9/2 ⁺)		
482.27 15	(11/2 ⁺)		
706.15 16	(13/2 ⁺)		
975.76 18	(15/2 ⁺)		
1259.25 23	(17/2 ⁺)		
1595.5 3	(19/2 ⁺)		
1654.78 23	(11/2 ⁺)	1.4 ns	$T_{1/2}$: from centroid shift of $\gamma\gamma(t)$ curve.
1868.79 23	(13/2 ⁺)		
2114.0 3	(15/2 ⁺)		
2141.70 22	(17/2 ⁺)	8.6 μs 8	$T_{1/2}$: Other value: 11 μs 2 (1999Ge01).

[†] Adopted values.

 $\gamma(^{99}\text{Y})$

I_γ normalization: From $\Sigma(I(\gamma+\text{ce})$ to g.s.)=100%.

Absolute γ -ray intensities (emission probabilities) are values calculated using the decay-scheme normalization.

E_γ	I_γ &	$E_i(\text{level})$	J^π_i	E_f	J^π_f	Mult. [†]	$\alpha^{\ddagger@}$	Comments
27.7 4	3 2	2141.70	(17/2 ⁺)	2114.0	(15/2 ⁺)	[M1]	7.3 4	$\alpha(\text{exp})=5.6$ 38 $\alpha(\text{K})=6.4$ 3; $\alpha(\text{L})=0.75$ 4; $\alpha(\text{M})=0.129$ 6 $\alpha(\text{N})=0.0172$ 8; $\alpha(\text{O})=0.00115$ 6 % $I_\gamma=2.6$ 14.
125.1 1	100 5	125.10	(7/2 ⁺)	0.0	(5/2 ⁺)	(M1)	0.0981	$\alpha(\text{exp})$: From balance of I_γ and I(K x ray). $\alpha(\text{K})=0.0863$ 13; $\alpha(\text{L})=0.00990$ 14; $\alpha(\text{M})=0.001695$ 24 $\alpha(\text{N})=0.000227$ 4; $\alpha(\text{O})=1.551\times 10^{-5}$ 22 % $I_\gamma=87$ 8.
158.7 1	63 5	283.79	(9/2 ⁺)	125.10	(7/2 ⁺)	(M1)	0.0517	$\alpha(\text{K})=0.0455$ 7; $\alpha(\text{L})=0.00518$ 8; $\alpha(\text{M})=0.000887$ 13 $\alpha(\text{N})=0.0001190$ 17; $\alpha(\text{O})=8.16\times 10^{-6}$ 12 % $I_\gamma=55$ 6.
198.5 1	43 4	482.27	(11/2 ⁺)	283.79	(9/2 ⁺)	[E2] [‡]	0.0875	$\alpha(\text{K})=0.0757$ 11; $\alpha(\text{L})=0.00993$ 14; $\alpha(\text{M})=0.001698$ 24 $\alpha(\text{N})=0.000219$ 3; $\alpha(\text{O})=1.216\times 10^{-5}$ 18 % $I_\gamma=38$ 5.
214.0 1	50 4	1868.79	(13/2 ⁺)	1654.78	(11/2 ⁺)	[M1,E2] [‡]	0.045 22	$\alpha(\text{K})=0.039$ 19; $\alpha(\text{L})=0.0049$ 26; $\alpha(\text{M})=8.4\times 10^{-4}$ 44 $\alpha(\text{N})=1.10\times 10^{-4}$ 56; $\alpha(\text{O})=6.5\times 10^{-6}$ 29 % $I_\gamma=44$ 5.

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^{99}Y IT decay **1985Me09** (continued) $\gamma(^{99}\text{Y})$ (continued)

E_γ	I_γ &	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [†]	$\alpha^{\ddagger@}$	Comments
223.9 1	36 2	706.15	(13/2 ⁺)	482.27	(11/2 ⁺)	(M1)	0.0210	$\alpha(\text{K})=0.0185$ 3; $\alpha(\text{L})=0.00208$ 3; $\alpha(\text{M})=0.000356$ 5 $\alpha(\text{N})=4.79\times 10^{-5}$ 7; $\alpha(\text{O})=3.30\times 10^{-6}$ 5 %I γ =31 3.
245.2 2	13 2	2114.0	(15/2 ⁺)	1868.79	(13/2 ⁺)	[M1,E2] [‡]	0.029 13	$\alpha(\text{K})=0.025$ 11; $\alpha(\text{L})=0.0031$ 15; $\alpha(\text{M})=5.3\times 10^{-4}$ 25 $\alpha(\text{N})=6.9\times 10^{-5}$ 32; $\alpha(\text{O})=4.2\times 10^{-6}$ 17 %I γ =11.3 17.
269.6 1	19 2	975.76	(15/2 ⁺)	706.15	(13/2 ⁺)	[M1,E2] [‡]	0.0213 83	$\alpha(\text{K})=0.0186$ 72; $\alpha(\text{L})=0.00224$ 95; $\alpha(\text{M})=3.8\times 10^{-4}$ 17 $\alpha(\text{N})=5.0\times 10^{-5}$ 21; $\alpha(\text{O})=3.2\times 10^{-6}$ 11 %I γ =16.5 17.
272.9 1	38 3	2141.70	(17/2 ⁺)	1868.79	(13/2 ⁺)	[E2] [‡]	0.0283	$\alpha(\text{K})=0.0247$ 4; $\alpha(\text{L})=0.00305$ 5; $\alpha(\text{M})=0.000521$ 8 $\alpha(\text{N})=6.81\times 10^{-5}$ 10; $\alpha(\text{O})=4.08\times 10^{-6}$ 6 B(E2)(W.u.)=0.00050 10 %I γ =33 23.
283.5 3	14 4	1259.25	(17/2 ⁺)	975.76	(15/2 ⁺)	[M1,E2]	0.0182 67	$\alpha(\text{K})=0.0159$ 58; $\alpha(\text{L})=0.00190$ 77; $\alpha(\text{M})=3.2\times 10^{-4}$ 13 $\alpha(\text{N})=4.3\times 10^{-5}$ 17; $\alpha(\text{O})=2.70\times 10^{-6}$ 89 %I γ =12 3.
283.8 3	5 2	283.79	(9/2 ⁺)	0.0	(5/2 ⁺)	[E2] [‡]	0.0248	$\alpha(\text{K})=0.0216$ 4; $\alpha(\text{L})=0.00265$ 4; $\alpha(\text{M})=0.000453$ 7 $\alpha(\text{N})=5.93\times 10^{-5}$ 9; $\alpha(\text{O})=3.57\times 10^{-6}$ 6 %I γ =4.4 17.
336.3 3	4 2	1595.5	(19/2 ⁺)	1259.25	(17/2 ⁺)	[M1,E2] [‡]	0.0107 32	$\alpha(\text{K})=0.0094$ 28; $\alpha(\text{L})=0.00110$ 36; $\alpha(\text{M})=1.88\times 10^{-4}$ 62 $\alpha(\text{N})=2.49\times 10^{-5}$ 79; $\alpha(\text{O})=1.61\times 10^{-6}$ 43 %I γ =3.5 17.
357.2 3	9 2	482.27	(11/2 ⁺)	125.10	(7/2 ⁺)	[E2] [‡]	0.01137	$\alpha(\text{K})=0.00996$ 15; $\alpha(\text{L})=0.001185$ 17; $\alpha(\text{M})=0.000202$ 3 $\alpha(\text{N})=2.67\times 10^{-5}$ 4; $\alpha(\text{O})=1.674\times 10^{-6}$ 24 %I γ =7.8 17.
422.3 2	13 2	706.15	(13/2 ⁺)	283.79	(9/2 ⁺)			%I γ =11.3 17.
459.2 3	4 2	2114.0	(15/2 ⁺)	1654.78	(11/2 ⁺)			%I γ =3.5 17.
493.5 3	10 2	975.76	(15/2 ⁺)	482.27	(11/2 ⁺)			%I γ =8.7 17.
^x 496.9 [#] 3	7 2							%I γ =6.1 17.
546.2 3	8 3	2141.70	(17/2 ⁺)	1595.5	(19/2 ⁺)			%I γ =7.0 25.
553.2 3	8 2	1259.25	(17/2 ⁺)	706.15	(13/2 ⁺)			%I γ =7.0 17.
619.7 3	4 2	1595.5	(19/2 ⁺)	975.76	(15/2 ⁺)			%I γ =3.5 17.
882.5 3	19 3	2141.70	(17/2 ⁺)	1259.25	(17/2 ⁺)			%I γ =17 3.
^x 938.8 [#] 4	6 2							%I γ =5.2 17.
1166.0 4	16 3	2141.70	(17/2 ⁺)	975.76	(15/2 ⁺)			%I γ =14 3.
1371.0 4	15 4	1654.78	(11/2 ⁺)	283.79	(9/2 ⁺)			%I γ =13 3.
1435.5 4	15 4	2141.70	(17/2 ⁺)	706.15	(13/2 ⁺)			%I γ =13 3.
1529.5 4	35 5	1654.78	(11/2 ⁺)	125.10	(7/2 ⁺)			%I γ =30 4.

[†] I(K x ray) determines E2 admixtures to be small. E1 excluded within rotational band.[‡] From the adopted gammas.

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⁹⁹Y IT decay **1985Me09** (continued)

γ(⁹⁹Y) (continued)

Possibly cascade deexciting the 2141.7 level.
@ [Additional information 2](#).
& For absolute intensity per 100 decays, multiply by 0.87 5.
^x γ ray not placed in level scheme.

^{99}Y IT decay 1985Me09**Decay Scheme**

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
 $\%IT=100.0$

Legend

- $\longrightarrow$ $I_{\gamma} < 2\% \times I_{\gamma}^{max}$
 $\longrightarrow$ $I_{\gamma} < 10\% \times I_{\gamma}^{max}$
 $\longrightarrow$ $I_{\gamma} > 10\% \times I_{\gamma}^{max}$

