

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 109,1103 (2008)	1-Mar-2008

$Q(\beta^-)=1855.0$ 9; $S(n)=6243.640$ 20; $S(p)=6748.3$ 9; $Q(\alpha)=1.8\times 10^2$ 4 [2012Wa38](#)

Note: Current evaluation has used the following Q record 1854.7 9 6243.64 2 6747.9 9 180 40 [2003Au03](#).

 ^{166}Ho LevelsCross Reference (XREF) Flags

A	$^{165}\text{Ho}(n,\gamma)$ E=thermal	E	^{166}Dy β^- decay
B	$^{167}\text{Er}(t,\alpha)$	F	$^{167}\text{Er}(d,^3\text{He})$
C	$^{165}\text{Ho}(n,\gamma)$ E=2 keV	G	^{166}Ho IT decay (185 μs)
D	$^{165}\text{Ho}(d,p)$	H	$^{165}\text{Ho}(n,\gamma)$ E=thermal: $\gamma\gamma$ coin

E(level) [†]	J ^π	T _{1/2}	XREF	Comments
0.0 [@]	0 ⁻	26.824 h 12	AB E GH	$\% \beta^- = 100$ T _{1/2} : weighted average of 26.74 h 5 (1966Da04), 26.79 h 3 (1968Ne02), 26.83 h 3 (1974Ry01), 27.00 h 4 (1976Ra32), 26.827 h 5 (1989Ab05), 26.794 h 23 (2002Un02 ; supersedes 26.7663 44 (1994Co02 and 1992Un01)). Others: 1946Bo25 , 1949Co15 , 1949Gr01 , 1950An12 , 1958Co76 , 1963Fu17 , 1963Ho15 . J ^π : J measured by atomic beam (if J>0 $\mu \leq 10 \times 10^{-4}$) (1976Fu06); 1773 β^- to 2 ⁺ level in ^{166}Er has 2-yes shape; E1 426 γ from 1 ⁺ 426.
5.969 ^a 12	7 ⁻	1.20 $\times 10^3$ y 18	AB D F	$\% \beta^- = 100$ $\mu = 3.60$ 5 (1980Al34); $Q = -3$ 3 (1981Ma43) J ^π : cross section fingerprint at 3 angles for 3 band members in (d,p) and (d, ³ He). E(level): calculated by 1978Ba78 . T _{1/2} : from 1965Fa01 . Other: 1952Bu18 . μ , Q: from static nuclear orientation. Other μ : 3.60 16 (1981Kr12), 3.65 13 (1981Ma43) from static nuclear orientation.
54.2391 [@] 7	2 ⁻	3.44 ns 12	ABCD FGH	$\mu = +0.068$ 10 (1979Ba40) μ : from IPAC. J ^π : E2 54 γ to 0 ⁻ g.s. T _{1/2} : from ^{166}Dy β^- decay.
82.4707 ^{&1} 20	1 ⁻	≤ 0.3 ns	ABCD F H	T _{1/2} : from ^{166}Dy β^- decay. J ^π : M1 82 γ to 0 ⁻ g.s.
137.729 ^a 13	8 ⁻		AB D F	J ^π : from σ fingerprint in (d,p) and (t, α).
171.0738 ^{&1} 12	3 ⁻		ABCD FGH	J ^π : M1 117 γ to 2 ⁻ 54; (d,p) cross section fingerprint.
180.467 [@] 3	4 ⁻		ABCD F H	J ^π : E2 126 γ to 2 ⁻ 54; (d,p) cross section fingerprint.
190.9021 ^b 20	3 ⁺ $\ddagger$	185 μs 15	A CD FGH	$\% \text{IT} = 100$ J ^π : E1 137 γ to 2 ⁻ 54; E1 20 γ to 3 ⁻ 171; (d,p) cross section fingerprint. T _{1/2} : from 1965Bj03 . Others: 214 μs 10 (1960Al27); 158 μs 14 (1964KaZZ); 207 μs (1965Mc03); see also 1961Kr01 , 1962En04 .
260.6625 ^b 23	4 ⁺ $\ddagger$	≤ 0.5 ns	A CD H	J ^π : M1 70 γ to 3 ⁺ 190; (d,p) cross section fingerprint. T _{1/2} : from (n, γ) E=thermal.
263.7876 ^c 24	5 ⁺	≤ 0.5 ns	ABCD F H	J ^π : E2 73 γ to 3 ⁺ 190; M2 258 γ to 7 ⁻ 6.0. Probable K=5 bandhead. T _{1/2} : from (n, γ) E=thermal.
286.96 ^a 13	9 ⁻		AB D F	XREF: D(287.5). J ^π : (d,p) cross section fingerprint.
295.085 ^d 9	(6) ⁺	1.10 ns 15	A D F	J ^π : E1 289 γ to 7 ⁻ 6; J=(6 ⁺) from σ in (d,p).

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Adopted Levels, Gammas (continued) ^{166}Ho Levels (continued)

E(level) [†]	J ^π	T _{1/2}	XREF	Comments
296.8 12	(1 ⁻ , 6 ⁻)		C	T _{1/2} : from (n,γ) E=thermal. J ^π : from (n,γ) E=2 keV. E(level): from (d, ³ He).
329.774 ^b 4	5 ⁻		ABCD F H	J ^π : (M1) 149γ to 4 ⁻ 181; J ^π =(2 ⁻ or 5 ⁻) from (n,γ) E=2 keV; (d,p) cross section fingerprint.
348.257 ^b 3	5 ⁺		A CD F H	J ^π : M1(+E2) 88γ to 4 ⁺ 261; (d,p) cross section fingerprint.
371.985 ^e 3	4 ⁺ [‡]	≤0.2 ns	A CD H	J ^π : (d,p) cross section fingerprint; M1(+E2) γ's to 4 ⁺ 261 and 5 ⁺ 264. T _{1/2} : from (n,γ) E=thermal.
373.092 ^q 8	(1) ⁻	≤0.2 ns	A H	J ^π : M1 291γ to 1 ⁻ 82; fit to a band. T _{1/2} : from (n,γ) E=thermal.
375.3 14	(6 ⁺)		b F	XREF: F(380.2). J ^π : from σ in (t,α). E(level): from (t,α).
377.806 [@] 4	(6 ⁻)		Ab d	J ^π : (E2) 197γ to 4 ⁻ 180; continuation of 2 ⁻ band.
379.547 ^c 4	6 ⁺		A d	J ^π : band assignment.
384.23 16			D	
416.086 ^q 6	2 ⁻	≤0.2 ns	A C H	J ^π : M1 334γ to 1 ⁻ 82; M1 245γ to 3 ⁻ 171. E(level): from (d,p). T _{1/2} : from (n,γ) E=thermal.
423.651 ^d 10	(7 ⁺)		A D	J ^π : fit to a band.
426.025 ^j 6	1 ⁺		A DE	J ^π : log ft=5.1 from 0 ⁺ .
430.031 ^h 4	2 ⁺	≤0.2 ns	ABC F H	J ^π : M1 239γ to 3 ⁺ ; J=2 from γ(θ) for primary feeding level. T _{1/2} : from (n,γ) E=thermal.
431.239 ^s 6	(5) ⁻		A	J ^π : 425γ to 7 ⁻ 6; E1 167γ to 5 ⁺ 264; band assignment.
453.771 ^b 4	(6) ⁺		A D F H	J ^π : M1(+E2) 106γ to (5) ⁺ 348; fit to a band.
464.501 ^j 6	2 ⁺		A CD	J ^π : M1(+E2) 38γ to 1 ⁺ 426; (d,p) cross section fingerprint.
470.841 ^e 3	5 ⁺		A CD	J ^π : M1,E2 99γ to 4 ⁺ 371; (d,p) cross section fingerprint.
475.680 ^q 7	(3) ⁻	≤0.2 ns	A CD H	J ^π : M1 305γ to 3 ⁻ 171; 103γ to (1) ⁻ 373; fit to a band. T _{1/2} : from (n,γ) E=thermal.
481.846 ^h 4	3 ⁺	≤0.2 ns	ABC F H	XREF: H(483.1). J ^π : (d,p) cross section fingerprint; J=3,4 from 5761γ(θ) in (pol n,γ) E=thermal. T _{1/2} : from (n,γ) E=thermal.
514.362 ^c 7	(7 ⁺) [#]		AB D	
521.982 ^j 6	3 ⁺		A CD H	J ^π : (d,p) cross section fingerprint.
529.816 ^s 8	(6 ⁻)		A	J ^π : 267γ to 5 ⁺ 264; 524γ to 7 ⁻ 6; 99γ to (5 ⁻) 431; band assignment.
543.672 ⁱ 4	2 ⁻		A C H	J ^π : E2 544γ to 0 ⁻ g.s.
547.934 ^h 5	4 ⁺		ABCD F H	J ^π : (d,p) cross section fingerprint; (M1) 199.7γ to 5 ⁺ 348.
557.65 ^{&1} 7	(7 ⁻)		AB	J ^π : continuation of 0 ⁻ band; σ in (t,α).
558.571 ^o 4	4 ⁺		A CD F	J ^π : J=4 from γ(θ) for primary γ feeding this level in (pol n,γ); M1(+E2) 210γ to 5 ⁺ 348.
562.890 ^q 7	4 ⁻		A CD H	J ^π : M1 392γ to 3 ⁻ 171; M1 233γ to 5 ⁻ 329.
567.624 ^g 7	(1 ⁺)		A D	J ^π : γ's to 1 ⁺ , (2 ⁺), (1) ⁻ , energy fit to the band.
577.208 ^b 7	7 ⁺		A D	J ^π : (d,p) cross section fingerprint.
588.083 ^e 7	6 ⁺		A D	J ^π : (d,p) cross section fingerprint.
592.501 ^k 9	(3 ⁺)		ABCD F H	J ^π : (3,4 ⁺) from (n,γ) E=2 keV; band assignment.
595.726 ^f 15	(1 ⁻)		A	J ^π : 594γ to 0 ⁻ g.s.; 120γ to (3) ⁻ 476; band assignment.
597.015 ⁱ 4	(3) ⁻		A C H	J ^π : M1+E2 543γ to 2 ⁻ 54; γ to 5 ⁻ .
598.448 ^j 6	4 ⁺		A CD H	J ^π : (d,p) cross section fingerprint.
605.047 ^g 7	2 ⁺		A CD	J ^π : (d,p) cross section fingerprint.
628.418 13	(2 ⁻ , 3 ⁻)		A C	J ^π : 255γ to (1) ⁻ 373; 437γ to 3 ⁺ 191; π=- from (n,γ) E=2 keV.

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Adopted Levels, Gammas (continued) ^{166}Ho Levels (continued)

E(level) [†]	J ^π	XREF	Comments
634.314 ^h 6	5 ⁺	ABCD F	J ^π : (d,p) cross section fingerprint.
638.235 ^r 9	(2 ⁻)	A C	J ^π : 265γ to 1 ⁻ 373; 116γ to 3 ⁺ 522; 467γ to 3 ⁻ 171; π=(-) from (n,γ) E=2 keV.
644.29 ^s 6	7 ⁻	A D	J ^π : band assignment supported by cross section in (d,p).
651.5 8	(3 ⁺ ,4 ⁻)	H	J ^π : 304γ to (5 ⁺) 348; 597γ to 2 ⁻ 54. E(level): from (n,γ) E=thermal: γγ coin.
654.818 ^o 14	(5 ⁺)	A CD F H	J ^π : 464γ to 3 ⁺ 191; 360γ to (6 ⁺) 295; band assignment.
657.995 ^q 11	(5 ⁻)	A C H	J ^π : π=(-) from (n,γ) E=2 keV; 182γ to (3 ⁻) 476; 328γ to 5 ⁻ 330; fit to a band.
659.01 ^t 4	(0 ⁻)	A C	J ^π : 286γ to (1 ⁻) 373; band assignment.
662.169 ^g 8	3 ⁺	A CD	J ^π : (d,p) cross section fingerprint.
668.005 ⁱ 6	(4 ⁻)	A C H	J ^π : M1 488γ to 4 ⁻ 180; 614γ to 2 ⁻ 54; 197γ to 5 ⁺ 471.
671.749 ^k 12	(4 ⁺)	A CD F	J ^π : 241γ to 2 ⁺ 430; 218γ to (6 ⁺) 454.
683.805 ^f 5	(3 ⁻)	A C	J ^π : M1(+E2) 140γ to 2 ⁻ 544; possible 423γ to 4 ⁺ 261; band assignment.
693.388 17	(2,3,4)	A	J ^π : 212γ to 3 ⁺ 482; 96γ to (3 ⁻) 597.
693.638 ^j 7	5 ⁺	A CD	J ^π : (d,p) cross section fingerprint; (2 ⁺ or 5 ⁺) from (n,γ) E=2 keV; γ to 3 ⁺ and 3 ⁻ and 5 ⁺ .
701.5 16		H	J ^π : γ to (5 ⁻) 330. E(level): from (n,γ) E=thermal: γγ coin.
704.962 ^r 14	(3 ⁻)	A C	J ^π : 109γ to 1 ⁻ 596; 533γ to 3 ⁻ 171; π=(-) from (n,γ) E=2 keV; band assignment.
715.4 8		H	XREF: H(717.0). E(level): from E _γ in (n,γ) E=thermal: γγ coin.
718 ^l 3	+	B	J ^π : L(t,α)=2 for 7/2 ⁺ target. E(level): from (t,α).
719.370 ^m 11	(4 ⁺)	A C F H	J ^π : M1(+E2) 456γ to 5 ⁺ 264; 57γ to 3 ⁺ 662; band assignment.
721.98 ^v 15	(6 ⁺)	A	J ^π : 427γ to (6 ⁺) 295; band assignment.
723.239 ^e 19	(7 ⁺)	A D	J ^π : transitions to 6 ⁺ and (7 ⁺); band assignment.
725.68 ^t 4	(2 ⁻)	A C	J ^π : 643γ to 1 ⁻ 82; 554γ to 3 ⁻ 171; π=(-) from (n,γ) E=2 keV; band assignment.
732.513 ^h 16	(6 ⁺)	AB F	J ^π : band assignment.
736.430 ^g 9	4 ⁺	A CD	J ^π : (d,p) cross section fingerprint.
742.02 ^f 3	(4 ⁻)	A C	J ^π : 198γ to 2 ⁻ 544; 412γ to 5 ⁻ 330; band assignment.
757.707 ⁱ 18	(5 ⁻)	A C H	J ^π : 161γ to (3 ⁻) 597; 380γ to (6 ⁻) 378; band assignment.
760.345 ^u 7	(3 ⁻)	A C	J ^π : 217γ to 2 ⁻ 544; 430γ to 5 ⁻ 330; band assignment.
769.78 ^k 4	(5 ⁺)	A Cd H	J ^π : 248γ to 3 ⁺ 522; 390γ to 6 ⁺ 380; (2 ⁺ or 5 ⁺) from (n,γ) E=2 keV.
771.94 ^o 8	(6 ⁺)	Cd	J ^π : transitions to 5 ⁺ and 5 ⁻ ; π from (n,γ) E=2 keV; band assignment.
774.522 ^t 16	(1 ⁻)	A	J ^π : 116γ to (0 ⁻) 659; 91γ to (3 ⁻) 684; band assignment.
788.618 ^q 11	(6 ⁻)	A	J ^π : transitions to 4 ⁻ and 5 ⁻ ; band assignment.
792.789 ^r 12	(4 ⁻)	A	J ^π : 155γ to (2 ⁻) 638; 612γ to 4 ⁻ 180; band assignment.
801 ^y 4	0 ⁺	B	J ^π : from (t,α) cross section fingerprint. E(level): from (t,α).
806.56 ^m 5	(5 ⁺)	A C f H	J ^π : 325γ to 3 ⁺ 482; 336γ to 5 ⁺ 471; (2 ⁺ ,5 ⁺) from (n,γ) E=2 keV.
807.011 ^j 8	6 ⁺	A D f	J ^π : (d,p) cross section fingerprint; γ to 5 ⁺ .
815.139 ^p 10	3 ⁺	A CD H	J ^π : J=3 from γ(θ) for primary γ feeding level in (pol n,γ); 389γ to 1 ⁺ 426; M1(+E2) 257γ to 4 ⁺ 559.
819.06 ^l 20		B D F	E(level): from (d,p).
824.62 4	(3 ⁻ ,4 ⁻)	A CD H	J ^π : π=(-) from (n,γ) E=2 keV; 634γ to 3 ⁺ 192; 563γ to 4 ⁺ 261.
832.197 ^g 9	5 ⁺	A CD	J ^π : (d,p) cross section fingerprint.
837.717 ^u 8	(4 ⁻)	A CD	J ^π : transitions to 4 ⁺ and (4 ⁻); π from (n,γ) E=2 keV; band assignment.
848.46 ^v 21	(7 ⁺)	A D	J ^π : 553γ to (6 ⁺) 295; band assignment.
856 ^y 6	2 ⁺	B	J ^π : from (t,α) cross section fingerprint. E(level): from (t,α).
858.1 15	(⁻)	C	E(level),J ^π : from (n,γ) E=2 keV.
860.7 15	(⁻)	C	E(level),J ^π : from (n,γ) E=2 keV.
868.24 ^t 14	(4 ⁻)	A C	XREF: C(867.1).

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Adopted Levels, Gammas (continued) ^{166}Ho Levels (continued)

E(level) [†]	J ^π	XREF	Comments
870.13 5	(4 ⁻ ,5 ⁻ ,6 ⁻)	A C H	J ^π : π=(-) from (n,γ) E=2 keV; 539γ to 5 ⁻ 330; 392γ to (3 ⁻) 476; band assignment. XREF: C(868.7)H(873.6).
876.37 22	(3 ⁻)	A C H	J ^π : π=(-) from (n,γ) E=2 keV; γ to 5 ⁺ 634. XREF: C(874.8)H(873.6).
878.6 10		C	J ^π : π=(-) from (n,γ) E=2 keV; 790γ to 1 ⁻ 82; 547γ to 5 ⁻ 330. E(level): from (n,γ) E=2 keV.
881.040 ^f 20	3 ⁽⁻⁾	A C H	XREF: C(881.6)H(881.9). J ^π : J=3 from γ(θ) for primary γ feeding level in (pol n,γ); 799γ to 1 ⁻ 82.
883.94 ^k 5	(6 ⁺)	A	J ^π : transitions to (4 ⁺) and possibly to (5 ⁺); band assignment.
885.371 ⁿ 21	+	ABCD F	XREF: B(884.0)C(884.4). J ^π : 217γ to (4 ⁻) 668; L(t,α)=2 for 7/2 ⁺ target.
891.134 ^p 13	(4 ⁺)	A CD	XREF: C(890.0). J ^π : transitions to 3 ⁺ and (5 ⁺); band assignment.
895.5 6		D	E(level): from (d,p).
902.2 10		C	E(level): from (n,γ) E=2 keV.
905.544 ^w 10	(2 ⁺)	A CD H	J ^π : 476γ to 2 ⁺ 430; 734γ to 3 ⁻ 171; band assignment.
910.49 ^m 4	(6 ⁺)	A D	J ^π : band assignment.
915 ^{&1} 3	(7 ⁺) [#]	B	E(level): from (t,α).
925.21 ^x 16	(5 ⁺)	A CD F	E(level): from (d,p). J ^π : band assignment.
935.12 ^u 4	(5 ⁻)	A	J ^π : band assignment.
942.524 ^g 15	(6 ⁺)	A	J ^π : band assignment.
945.86 ^l 5		ABC	XREF: B(946).
947.1 6		H	J ^π : transitions to 2 ⁻ and 3 ⁻ . E(level): from (n,γ) E=thermal: γγ coin.
951.1 3		A C	
953.4 11	(3 ⁻ ,4 ⁻)	H	J ^π : transitions to 2 ⁻ and 5 ⁻ . E(level): from (n,γ) E=thermal: γγ coin.
961.08 ^w 6	3 ⁺	A CD H	J ^π : 535γ to 1 ⁺ 426; 701γ to 4 ⁺ 261; band assignment.
976.1 ^z 5	1 ⁺	BC H	XREF: B(974)C(976.1)H(973.7). J ^π : from (t,α) cross section fingerprint.
978.55 24		A CD	XREF: A(977.2). E(level): from (d,p).
979.8 10		A CD	J ^π : from (n,γ) E=2 keV.
985.20 ^p 8	(5 ⁺)	A CD	J ^π : band assignment supported by cross section in (d,p).
996.8 8	(4 ⁺ ,5,6 ⁺)	C H	XREF: C(998.8). J ^π : 736γ to 4 ⁺ 261; 544γ to (6 ⁺) 454. E(level): from (n,γ) E=thermal: γγ coin.
1004.84 5	(2 ⁻ ,3 ⁻)	A CD H	XREF: C(1003.5). J ^π : 634γ to 1 ⁻ 372; 824γ to 4 ⁻ 180.
1006 ⁿ 4		B	
1010.68 18	(3 ⁻ ,4,5 ⁻)	A CD F H	J ^π : transitions to 3 ⁻ 171 and 5 ⁻ 330.
1016.23 15	(2,3,4 ⁻)	A C H	J ^π : 961γ to 2 ⁻ 54; 825γ to 3 ⁺ 191; primary γ from 3 ⁻ ,4 ⁻ .
1019.2 5		A C	
1023.3 7		A C H	J ^π : transitions to 3 ⁺ 191 and to 4 ⁻ 180. E(level): from (n,γ) E=thermal: γγ coin.
1026.1 5		A C	
1028.7 15		H	E(level): from (n,γ) E=thermal: γγ coin.
1029.0 12		H	E(level): from (n,γ) E=thermal: γγ coin.
1030.38 ^w 3	(4 ⁺) [‡]	A cD H	XREF: c(1032.3).
1035.8 6	(0 ⁻ ,1,2 ⁻)	Bc H	XREF: B(1037)c(1032.3). J ^π : 982γ to 2 ⁻ 54, 1036γ to 0 ⁻ g.s. E(level): from (n,γ) E=thermal: γγ coin.
1038.4 ^x 3	(6 ⁺)	A D	E(level): from (d,p).

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Adopted Levels, Gammas (continued) ^{166}Ho Levels (continued)

E(level) [†]	J ^π	XREF	Comments
1045.7 15		C	J ^π : band assignment.
1054.87 22		A CD H	E(level): from (n,γ) E=2 keV.
1060.5 2		C H	E(level): from (n,γ) E=2 keV.
1062.7 9	2,4	A C H	J ^π : 2,4 from primary γ(θ) (1979Bo08). However, deexciting gammas proposed in (n,γ) E=thermal: γγ coin feed 5 ⁺ and 4 ⁻ and 1 ⁻ levels, so some must have been misplaced.
1066 ^z 5	3 ⁺	B	E(level): from (n,γ) E=thermal: γγ coin.
1077.2 2		C	J ^π : from (t,α) cross section fingerprint.
1086.4 3	3 [‡]	A CD H	E(level): from (n,γ) E=2 keV.
1090.7 ^l 15		C	E(level): from (n,γ) E=2 keV.
1093.7 19		F	E(level): from (d, ³ He).
1097.45 ^p 5	(6 ⁺)	ABCD H	XREF: B(1091)C(1096.3)D(1098.6)H(1099.8). J ^π : 837γ to (5) ⁺ 264; band assignment. However, 624γ to (3) ⁻ 476; this suggests that 624γ is misplaced or that 1097 level is a doublet.
1114.67 3	(5 ⁻)	A CD H	J ^π : 943γ to 3 ⁻ 171, 661γ to (6 ⁺) 454. J=3,(5) from primary γ(θ) in (pol n,γ) (1979Bo08).
1118.7 10		C H	E(level): from (n,γ) E=2 keV.
1121.41 7	(3 ⁻ ,4 ⁻)	AbC H	XREF: b(1126). J ^π : 704γ to 2 ⁻ 416, 792γ to (5 ⁻) 330.
1131.0 3		AbCD	XREF: b(1126).
1134.97 11		A C H	
1137.79 12		A CD H	
1141.3 3		A F H	
1146 ⁿ 5		B	E(level): from (t,α).
1146.7 ² 4	1 ⁺	ABCD	XREF: D(1148.5). J ^π : from (t,α) cross section fingerprint.
1153.0 5		C	E(level): from (d,p).
1154.84 4	(3,4)	A C H	E(level): from (n,γ) E=2 keV.
1158.5 10		C	J ^π : possible gammas to 3 ⁻ and 3 ⁺ and 4 ⁻ and 4 ⁺ .
1161.35 3	(4 ⁺) [‡]	A CD H	E(level): from (n,γ) E=2 keV.
1168.4 11	(4 ⁺ ,5 ⁺)	D H	J ^π : 732γ to 2 ⁽⁺⁾ 430, 831γ to (5 ⁻) 330, 899γ to (5) ⁺ 264.
1174.9 5		A D	E(level): from (d,p).
1190.13 ² 4	2 ⁺	AB D H	J ^π : 714γ to (6 ⁺) 454, 977γ to 3 ⁺ 192.
1199.4 13		A	J ^π : from (t,α) cross section fingerprint. 713γ to (3) ⁻ 476, 929γ to 4 ⁺ 261.
1202.11 14		Ab D	XREF: b(1205).
1208.61 9		Ab D	XREF: b(1205).
1214.93 23		A	
1217.2 3		A D	
1221.61 13		A	
1226.9 15		D	E(level): from (d,p).
1230.04 4		A	
1234.86 12		A	
1240.70 ² 6	3 ⁺	AB D	J ^π : from (t,α) cross section fingerprint.
1244.24 7		A D	
1248.19 10		A	
1252.65 14		A	
1256.87 12		A	
1263.84 4		A D	
1271.44 19		A D	
1272.0 ³ 20	(6 ⁺) [#]	B	E(level): from (t,α).
1280.7 18		D	E(level): from (d,p).
1289.29 11		A D	
1293.79 7		A	

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Adopted Levels, Gammas (continued) ^{166}Ho Levels (continued)

E(level) [†]	J ^π	XREF	Comments
1298.45 7		A D	
1301.07 9		A	
1304.81 ² 13	4 ⁺	AB D	J ^π : from (t,α) cross section fingerprint.
1310.54 15		A D	
1318.0 3		A	
1322.0 3		A	
1327.55 21		A D	
1332.1 6		A	
1334.5 21		D	E(level): from (d,p).
1338.75 6		A d	
1343.06 8		A d	
1349.93 5		A D	
1355.02 5		Ab	XREF: b(1356).
1358.8 22		b D	XREF: b(1356). E(level): from (d,p).
1362.73 11		A	
1367.31 16		A D	
1371.4 10		A	
1376.81 6		A D	
1380.15 ² 19	5 ⁺	AB D	XREF: B(1379)D(1382.6). J ^π : from (t,α) cross section fingerprint.
1387.75 5		A D	
1391.93 11		A	
1396.77 7		A D	
1401.77 11		A	
1405.8 3		A	
1415.80 ³ 4	(7 ⁺)	AB D	
1421.48 13		A	
1429.80 7		A D	XREF: D(1426).
1433.64 12		A D	
1440 3		D	E(level): from (d,p).
1448.92 5		A D	XREF: D(1445).
1458.8 5		A D	
1461.6 4		AB	
1463.91 14		A D	
1467.3 5		A	
1471.7 4		A D	
1474.4 6		A	
1478.49 13		Ab	XREF: b(1487).
1487.15 13		Ab D	XREF: b(1487).
1494.59 18		Ab	XREF: b(1487).
1498.1 4		A D	
1505.5 3		A D	
1510.60 7		Ab D	XREF: b(1519).
1521.2 4		Ab	XREF: b(1519).
1526.86 17		b D	XREF: b(1519).
1532.12 6		A D	
1537.62 11		A D	
1540.9 5		A	
1544.4 10		A	
1547.49 12		A D	
1552.95 13		A	
1558.90 17		A D	
1560 ⁴ 5	(6 ⁻) [#]	B	
1561.0 4		A	
1566.5 5		A	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) ^{166}Ho Levels (continued)

E(level) [†]	J ^π	XREF	Comments
1570.75 7		A D	
1576.89 12		A D	
1588.79 13		Ab	XREF: b(1585).
1592.47 18		Ab D	XREF: b(1585).
1599.98 9		A D	
1603.81 15		Ab D	XREF: b(1604).
1606.25 24		Ab	XREF: b(1604).
1614.0 4		A d	
1616.0 3		A d	
1620.3 3		Ab D	XREF: b(1628)D(1623).
1628.1 4		Ab	XREF: b(1628).
1629.9 3		Ab	XREF: b(1628).
1635.51 9		Ab d	XREF: b(1628).
1638.97 16		A d	
1644.49 15		AB D	
1655.0 5		A d	
1657.5 3		A d	
1661.57 21		A	
1666.15 9		A	
1671.64 8		A	
1676.69 12		A D	
1681.2 5		A	
1683.5 4		A	
1687.3 5		A D	
1692 ⁴ 4	(7 ⁻) [#]	B D	
1695.01 7		A D	
1704.31 8		A D	
1710.6 3		A	
1713.24 23		A	
1716.65 20		A D	
1723.8 6		A D	
1731.10 11		A D	
1742.26 12		AB D	XREF: B(1743).
1752.4 3		A D	
1756.8 6		A	
1759.6 3		A D	
1763.59 9		A D	
1769.46 18		A	
1776.76 7		A D	
1785.5 3		Ab D	
1788 5		b D	E(level): from (d,p).
1794.18 15		Ab	
1798.5 4		A	
1805.5 3		A	
1816.98 9		A	
1823.86 10		A	
1829.53 24		A	
1834 ⁴	(8 ⁻) [#]	B	
1835.60 16		A	
1838.6 11		A	
1842.99 9		A	
1851.1 3		A	
1854.98 13		A	
1859.34 11		A	
1864.8 6		A	
1870.3 4		A	

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Adopted Levels, Gammas (continued) ^{166}Ho Levels (continued)

<u>E(level)[†]</u>	<u>J^π</u>	<u>XREF</u>
1876.86 9		A
1882.99 18		A
1890.85 11		A
1895.28 11		A
1898.96 15		A
1907.67 11		A
1914.0 4		A
1916.3 6		A
1919.32 15		A
1928.17 10		A
1933.09 16		A
1938.88 10		A
1945.97 16		A
1950.87 12		A
1954.3 7		A
1957.52 21		A
1960.67 14		A
1969.8 3		A
1972.9 8		A
1975.5 4		A
1978.33 18		A
1985.98 14		A
1995.37 16		A
1998 ⁴ 6	(9 ⁻) [#]	B
1998.94 20		A
2004.89 10		A
2010.77 13		A
2015.07 21		A
2017.6 4		A
2023.0 3		A
2025.63 19		A
2029.8 3		A
2032.02 23		A
2037.44 17		A
2040.4 3		A
2051.3 4		A
2054.4 3		A
2056.7 5		A
2058.7 3		A
2062.1 5		A
2065.20 15		A
2072.60 20		A
2075.3 5		A
2077.72 25		A
2087.76 18		A
2090.96 20		A
2094.4 4		A
2098.37 15		A
2103.7 4		A
2105.7 6		A
2109.2 6		A
2111.7 4		A
2115.82 23		A
2118.7 5		A
2122.5 3		A
2127.47 18		A
2131.19 16		A

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) ^{166}Ho Levels (continued)

E(level) [†]	XREF	Comments
2137.2 4	A	
2139.3 5	A	
2145.43 17	A	
2148.5 3	A	
2151.68 16	A	
2157.34 14	Ab	XREF: b(2160).
2161.1 3	Ab	XREF: b(2160).
2163.80 24	Ab	XREF: b(2160).
2167.7 4	A	
2169.8 4	A	
2172.1 5	A	
2180.0 3	A	
2182.92 22	A	
2193.20 15	A	

[†] From (n, γ) E=thermal, except as noted; obtained from least-squares fit to $E\gamma$, excluding data for multiply-placed transitions and for the 48.303 γ and 232.286 γ , both of which fit their placement particularly poorly. However, it should be noted that 28 of the remaining 570 $E\gamma$ data deviate by at least 3σ from the least-squares prediction and, of those, 12 deviate by at least 5σ .

[‡] Spin from the angular distribution measurements of the primary γ transition (1979Bo08).

[#] From comparison of $\sigma(\text{exp})$ and $\sigma(\text{calc})$ in (t, α).

[@] Band(A): $K^\pi=0^-$, $\alpha=0$ (π 7/2[523])-(ν 7/2[633]) band. $A=9.0$, $B=-1.2\times 10^{-3}$. J^π established by (d,p) cross section fingerprint for J=1 through 5 members of this configuration.

[&] Band(a): $K^\pi=0^-$, $\alpha=1$ (π 7/2[523])-(ν 7/2[633]) band. $A=8.9$, $B=-1.6\times 10^{-3}$. See comment on signature partner of this band.

^a Band(B): $K^\pi=7^-$, (π 7/2[523])+(ν 7/2[633]) band. J^π established by (d,p) cross section fingerprint for J=7 through 9 members of this configuration.

^b Band(C): $K^\pi=3^+$, (π 7/2[523])-(ν 1/2[521]) band. $A=8.7$, $B=2.2\times 10^{-3}$. J^π established by (d,p) cross section fingerprint for J=3 through 7 members of this configuration.

^c Band(D): $K^\pi=5^+$, (π 3/2[411])+(ν 7/2[633])+(π 7/2[523])+(ν 3/2[521]). $A=14.45$, $B=-4.5\times 10^{-2}$.

^d Band(E): $K^\pi=6^+$, (π 7/2[523])+(ν 5/2[512]) band. $A=9.1$ if $B=0$.

^e Band(F): $K^\pi=4^+$, (π 7/2[523])+(ν 1/2[521]) band. $A=9.9$ if $B=0$. J^π established by (d,p) cross section fingerprint for J=4 through 6 members of this configuration.

^f Band(G): $K^\pi=1^-$, (π 1/2[411])+(ν 1/2[521]) band.

^g Band(H): $K^\pi=1^+$, (π 7/2[523])-(ν 5/2[523]) band. $A=9.65$, $B=-3.7\times 10^{-3}$. J^π established by (d,p) cross section fingerprint for J=1 through 5 members of this configuration.

^h Band(I): $K^\pi=2^+$, (π 3/2[411])-(ν 7/2[633])+(π 7/2[523])-(ν 3/2[521]). $A=9.1$, $B=-26.6\times 10^{-3}$. J^π established by (d, ^3He) cross section fingerprint for J=3 through 6 members of this configuration.

ⁱ Band(J): $K^\pi=2^-$, (π 7/2[523])-(ν 7/2[633])+(ν 22) band. $A=8.9$, $B=-1.3\times 10^{-3}$.

^j Band(K): $K^\pi=1^+$, (π 7/2[523])-(ν 5/2[512]) band. $A=9.4$ if $B=0$. J^π established by (d,p) cross section fingerprint for J=1 through 6 members of this configuration.

^k Band(L): $K^\pi=3^+$, (π 1/2[411])-(ν 7/2[633]) band.

^l Band(M): $\pi=+$ band 1 (1982De37). Configuration not known; the $K^\pi=3^+$ configuration assigned in (t, α) (1982De37) is now assigned to a different sequence of levels.

^m Band(N): $K^\pi=4^+$, (π 1/2[411])+(ν 7/2[633]) band. Configuration from (t, α) data (1982De37).

ⁿ Band(O): $\pi=+$ band 2 (1982De37). Configuration not known; the $K^\pi=4^+$ configuration assigned in (t, α) (1982De37) is now assigned to a different sequence of levels.

^o Band(P): $K^\pi=4^+$, (π 7/2[523])+(ν 1/2[510]) band.

^p Band(Q): $K^\pi=3^+$, (π 7/2[523])-(ν 1/2[510]) band.

^q Band(R): $K^\pi=1^-$, (π 3/2[411])-(ν 1/2[521]) band.

^r Band(S): $K^\pi=2^-$, (π 3/2[411])+(ν 1/2[521]) band.

^s Band(T): $K^\pi=5^-$, (π 7/2[523])+(ν 7/2[633])-(ν 22) band.

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Adopted Levels, Gammas (continued) ^{166}Ho Levels (continued)

- ^t Band(U): $K^\pi=0^-$, (π 1/2[411])-(ν 1/2[521]) band.
- ^u Band(V): $K^\pi=3^-$ band. Configuration (π 1/2[541])-(ν 7/2[633]) or (π 1/2[411])+(ν 5/2[512]).
- ^v Band(W): $K^\pi=6^+$, (π 7/2[523])+(ν 5/2[523]) band.
- ^w Band(X): $K^\pi=2^+$, (π 7/2[523])-(ν 3/2[521]) band.
- ^x Band(Y): $K^\pi=5^+$, (π 7/2[523])+(ν 3/2[521]) band.
- ^y Band(Z): $K^\pi=0^+$, $\alpha=0$ (π 7/2[404])-(ν 7/2[633]) band. Configuration from (t, α) data (1982De37). J^π established by (t, α) cross section fingerprint for J=0 through 3 members of this configuration.
- ^z Band(z): $K^\pi=0^+$, $\alpha=1$ (π 7/2[404])-(ν 7/2[633]) band. Configuration from (t, α) data (1982De37). See comment on signature partner band.
- ¹ Band(a): $K^\pi=7^+$, (π 7/2[404])+(ν 7/2[633]) band. Configuration from (t, α) data (1982De37).
- ² Band(b): $K^\pi=1^+$, (π 5/2[413])-(ν 7/2[633]) band. Configuration from (t, α) data (1982De37). J^π established by (t, α) cross section fingerprint for J=1 through 5 members of this configuration.
- ³ Band(c): $K^\pi=6^+$, (π 5/2[413])+(ν 7/2[633]) band. Configuration from (t, α) data (1982De37).
- ⁴ Band(d): $K^\pi=6^-$, (π 5/2[532])+(ν 7/2[633]) band. Configuration and level energy from (t, α) (1982De37).

Adopted Levels, Gammas (continued)

$\gamma(^{166}\text{Ho})$									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^{\ddagger\ddagger}$	E_f	J_f^π	Mult. [†]	$\alpha^\&$	$I_{(\gamma+ce)}$	Comments
54.2391	2 ⁻	54.2392 7	100	0.0	0 ⁻	E2 @	31.3		B(E2)(W.u.)=198 7
82.4707	1 ⁻	28.242 9	4.1 2	54.2391	2 ⁻	M1 @	16.9 9		B(M1)(W.u.) $\geq$ 0.021 Other data: $E_\gamma=28.227$ 5, $I_\gamma=8.2$ 6 in IT decay.
		82.470 2	100 10	0.0	0 ⁻	M1 @	4.55		B(M1)(W.u.) $\geq$ 0.020
137.729	8 ⁻	131.759 5	100	5.969	7 ⁻				
171.0738	3 ⁻	88.60 ^c 3	0.19	82.4707	1 ⁻	[E2]	4.466		
		116.835 1	100 10	54.2391	2 ⁻	M1	1.673		
180.467	4 ⁻	(9.39)		171.0738	3 ⁻			1160 94	$I_{(\gamma+ce)}$: from intensity balance at 180 level in (n, γ) E=thermal.
		126.228 3	100 10	54.2391	2 ⁻	E2	1.200		
190.9021	3 ⁺	10.43 2	0.19 3	180.467	4 ⁻	[E1]	27.2		B(E1)(W.u.)= 1.4×10^{-9} 2
		19.840 6	4.0 3	171.0738	3 ⁻	E1	4.79		B(E1)(W.u.)= 4.3×10^{-9} 5 Mult.: from IT decay (1965Bj03).
		136.662 2	100 10	54.2391	2 ⁻	E1	0.1378		$\alpha(K)=0.116$; $\alpha(L)=0.0175$; $\alpha(M)=0.00384$; $\alpha(N+..)=0.00108$
260.6625	4 ⁺	69.7604 14	100 11	190.9021	3 ⁺	M1	7.37		B(E1)(W.u.)= 0.33×10^{-9} 3
		89.599 13	3.6 5	171.0738	3 ⁻	[E1]	0.424		B(M1)(W.u.) $\geq$ 0.015
263.7876	5 ⁺	(3.12)		260.6625	4 ⁺				E_γ : from level energy difference. Transition unobserved, but expected.
									$I_{(\gamma+ce)}$: =1580 270 from intensity balance at 263 level in (n, γ) E=thermal. However, this leads to B(M2)(W.u.)(258 γ)>69 and B(E2)(W.u.)(72.9 γ)>300, both of which exceed RUL (assuming $\alpha(72\gamma)=9.62$, $\alpha(258\gamma)=0.844$). $I(\gamma+ce)(3.1)=17.5\times 10^4$ would be needed to reduce B(M2)(W.u.)(258 γ) to 1.
		72.8859 15	77 15	190.9021	3 ⁺	E2	9.62		
		257.81 2	100 15	5.969	7 ⁻	M2	0.844		
286.96	9 ⁻	280.99 10	100	5.969	7 ⁻				
295.085	(6) ⁺	289.120 15	100	5.969	7 ⁻	E1	0.0196		B(E1) $\downarrow=0.83\times 10^{-5}$ 15
329.774	5 ⁻	149.307 3	100 10	180.467	4 ⁻	(M1)	0.835		
		158.702 9	1.4 3	171.0738	3 ⁻				
348.257	5 ⁺	(18.49)		329.774	5 ⁻				
		87.5946 16	100 10	260.6625	4 ⁺	M1(+E2)	4.2 5		
		157.344 8	16.9 24	190.9021	3 ⁺				
371.985	4 ⁺	108.199 2	73 8	263.7876	5 ⁺	M1(+E2)	2.09 4		
		111.324 2	54 5	260.6625	4 ⁺	M1(+E2)	1.91		
		181.086 5	100 11	190.9021	3 ⁺	(M1)	0.487		B(M1) $\downarrow\geq 0.57\times 10^{-2}$
373.092	(1) ⁻	201.95 3	2.9 6	171.0738	3 ⁻				
		290.61 3	100 10	82.4707	1 ⁻	M1	0.1337		B(M1)(W.u.) $\geq 0.39\times 10^{-2}$
377.806	(6 ⁻)	48.0315 7	53 9	329.774	5 ⁻				
		197.339 8	100 15	180.467	4 ⁻	(E2)	0.255		
379.547	6 ⁺	84.468 10	29 7	295.085	(6) ⁺				

Adopted Levels, Gammas (continued)

<u>$\gamma(^{166}\text{Ho})$ (continued)</u>									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^{\ddagger\ddagger}$	E_f	J_f^π	Mult. [†]	$\alpha^\&$	Comments	
379.547	6 ⁺	115.759 3	76 11	263.7876	5 ⁺				
		373.47 7	100 16	5.969	7 ⁻				
416.086	2 ⁻	(43.00)		373.092	(1) ⁻				
		245.007 7	65 6	171.0738	3 ⁻	M1	0.212	B(M1)(W.u.) $\geq 2.6 \times 10^{-3}$	
		333.63 2	100 15	82.4707	1 ⁻	M1	0.0925	B(M1)(W.u.) $\geq 1.6 \times 10^{-3}$	
423.651	(7 ⁺)	128.566 5	100 15	295.085	(6) ⁺				
		159.89 3	7.1 21	263.7876	5 ⁺				
		285.81 ^a 8	<56 ^a	137.729	8 ⁻				
426.025	1 ⁺	343.51 3	10.0 16	82.4707	1 ⁻	(E1) [@]	0.01281	I_γ : weighted average from β^- decay and (n, γ) E=thermal.	
		371.75 3	83 7	54.2391	2 ⁻	E1 [@]	0.01060	I_γ : weighted average from β^- decay and (n, γ) E=thermal.	
		425.99 3	100 13	0.0	0 ⁻	E1 [@]	0.0070	I_γ : weighted average from β^- decay and (n, γ) E=thermal.	
430.031	2 ⁺	169.45 3	0.48	260.6625	4 ⁺				
		239.140 11	100 10	190.9021	3 ⁺	M1	0.226	B(M1)(W.u.) $\geq 0.65 \times 10^{-2}$	
431.239	(5) ⁻	167.450 5	73 8	263.7876	5 ⁺	E1			
		425.30 3	100 20	5.969	7 ⁻				
453.771	(6) ⁺	105.517 4	100 10	348.257	5 ⁺	M1(+E2)	2.27 5		
		193.107 6	36 4	260.6625	4 ⁺				
464.501	2 ⁺	38.493 6	25.0 15	426.025	1 ⁺	M1(+E2)	9 $\times 10^1$ 8		
		48.303 4	2.2	416.086	2 ⁻				
		91.407 13	6.6 13	373.092	(1) ⁻				
		273.64 7	11.8 22	190.9021	3 ⁺				
		293.42 8	5.2 10	171.0738	3 ⁻				
		410.27 2	100 20	54.2391	2 ⁻				
470.841	5 ⁺	91.286 13	13 3	379.547	6 ⁺				
		98.8572 15	100 11	371.985	4 ⁺	M1,E2	2.82 13		
		122.577 4	16 3	348.257	5 ⁺				
		175.73 4	5.4 16	295.085	(6) ⁺				
		207.04 2	7.1 11	263.7876	5 ⁺				
		279.79 10	5.4 16	190.9021	3 ⁺				
475.680	(3) ⁻	(59.60)		416.086	2 ⁻				
		102.55 4	0.6	373.092	(1) ⁻	[E2]	2.57	B(E2)(W.u.) ≥ 24	
		304.60 2	100 10	171.0738	3 ⁻	M1	0.1179	B(M1)(W.u.) $\geq 0.35 \times 10^{-2}$	
		420.7 6	6.2 19	54.2391	2 ⁻				
481.846	3 ⁺	51.8155 7	5.9 8	430.031	2 ⁺	[M1]	2.83	B(M1)(W.u.) ≥ 0.030	
		109.887 18	0.51 13	371.985	4 ⁺	[M1]	1.99	B(M1)(W.u.) $\geq 0.27 \times 10^{-3}$	
		221.174 9	100 10	260.6625	4 ⁺	(M1)	0.280	B(M1)(W.u.) $\geq 0.66 \times 10^{-2}$	
		291.04 8	3.1	190.9021	3 ⁺				
514.362	(7 ⁺)	134.815 6	86 21	379.547	6 ⁺				
		250.49 9	100 20	263.7876	5 ⁺				
521.982	3 ⁺	57.517 8	100 19	464.501	2 ⁺				

Adopted Levels, Gammas (continued)

$\gamma(^{166}\text{Ho})$ (continued)								
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^{\ddagger\dagger}$	E_f	J_f^π	Mult. [†]	$\alpha^\&$	Comments
521.982	3 ⁺	95.953 2	38 4	426.025	1 ⁺			
		261.31 7	13 4	260.6625	4 ⁺			
		341.57 3	20 4	180.467	4 ⁻			
529.816	(6 ⁻)	98.572 16	8.0 16	431.239	(5) ⁻			
		150.268 8	22 3	379.547	6 ⁺			
		234.79 5	10	295.085	(6) ⁺			
		266.53 ^a 5	<58 ^a	263.7876	5 ⁺			
		524.2 3	100 20	5.969	7 ⁻			
543.672	2 ⁻	113.644 4	4.7 7	430.031	2 ⁺			Other I(114 γ):I(489 γ)=10.7 12:100 5 from 2007ChZX in (n, γ) E=thermal.
		170.584 15	1.6 3	373.092	(1) ⁻			
		363.1 3	1.6	180.467	4 ⁻			Other I(363 γ):I(489 γ)=2.5 8:100 5 from 2007ChZX in (n, γ) E=thermal.
		489.39 5	100 9	54.2391	2 ⁻	E2+M1	0.025 9	Other I(544 γ):I(489 γ)=87 4:100 5 from 2007ChZX in (n, γ) E=thermal.
		543.66 20	75 19	0.0	0 ⁻	E2	0.01275	I γ =1667 500 in (n, γ) E=thermal: $\gamma\gamma$ coin is grossly discrepant.
547.934	4 ⁺	66.103 7	25 5	481.846	3 ⁺			
		175.98 2	8.8 18	371.985	4 ⁺			
		199.710 8	100 10	348.257	5 ⁺	(M1)	0.371	
		287.24 3	21 3	260.6625	4 ⁺			Other I(287 γ):I(200 γ)=11.7 17:100 6 from 2007ChZX in (n, γ) E=thermal.
		357.04 4	36 8	190.9021	3 ⁺			
		376.91 ^a 14	<18 ^a	171.0738	3 ⁻			
557.65	(7 ⁻)	179.882 ^b 4	100 ^b 33	377.806	(6) ⁻	(M1,E2)	0.42 8	
		227.88 7	13.3	329.774	5 ⁻			
558.571	4 ⁺	76.7255 14	49 8	481.846	3 ⁺			
		83.049 ^a 14	<17 ^a	475.680	(3) ⁻			
		186.582 6	72 8	371.985	4 ⁺	E2+M1	0.38 7	
		210.300 6	77 13	348.257	5 ⁺	M1(+E2)	0.26 6	
		263.36 5	31 5	295.085	(6) ⁺			
		297.90 3	100 20	260.6625	4 ⁺	M1(+E2)	0.10 3	
		367.54 16	18	190.9021	3 ⁺			
562.890	4 ⁻	87.193 15	3.5 11	475.680	(3) ⁻			
		146.808 8	8.4 12	416.086	2 ⁻			
		233.112 14	56 5	329.774	5 ⁻	M1	0.243	Other I(233 γ):I(392 γ)=75 8:100 10 from 2007ChZX in (n, γ) E=thermal.
		382.8 2	4.4	180.467	4 ⁻			
		391.89 4	100 10	171.0738	3 ⁻	M1	0.0605	
		508.4 8	25 7	54.2391	2 ⁻			Other I γ : 75 20 from (n, γ) E=thermal: $\gamma\gamma$ coin.
567.624	(1 ⁺)	103.116 15	40 6	464.501	2 ⁺			
		137.51 ^c 2	15 5	430.031	2 ⁺			
		141.599 7	100 10	426.025	1 ⁺			
		151.533 9	62 9	416.086	2 ⁻			Other I(152 γ):I(141 γ)=36 10:100 21 from 2007ChZX in (n, γ) E=thermal.
		194.529 10	100 15	373.092	(1) ⁻			
577.208	7 ⁺	123.437 5	<96	453.771	(6) ⁺			

Adopted Levels, Gammas (continued)

$\gamma(^{166}\text{Ho})$ (continued)								
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^{\ddagger\dagger}$	E_f	J_f^π	Mult. [†]	$\alpha^\&$	Comments
577.208	7 ⁺	229.00 ^a 7	<55 ^a	348.257	5 ⁺			
		313.48 ^a 6	100 ^a 33	263.7876	5 ⁺			
588.083	6 ⁺	117.264 ^a 3	100 ^a 10	470.841	5 ⁺			
		134.34 3	10 3	453.771	(6) ⁺			
		216.16 5	10 3	371.985	4 ⁺			
592.501	(3 ⁺)	162.452 10	3.1 6	430.031	2 ⁺			
		331.88 3	12.9 19	260.6625	4 ⁺			
		401.56 6	100 14	190.9021	3 ⁺	(M1,E2)	0.043 15	
		412.1 ^a 2	<35 ^a	180.467	4 ⁻			
595.726	(1 ⁻)	120.06 2	2.5 8	475.680	(3) ⁻			
		179.882 ^b 4	13 ^b 4	416.086	2 ⁻			
		512.7 ^b 3	100 ^b 20	82.4707	1 ⁻			
		593.8 7	10	0.0	0 ⁻			
597.015	(3) ⁻	53.3434 7	2.6 4	543.672	2 ⁻			
		115.167 4	2.6 4	481.846	3 ⁺			
		121.48 3	0.29	475.680	(3) ⁻			
		132.472 17	0.86	464.501	2 ⁺			
		166.983 5	4.9 5	430.031	2 ⁺			
		181.086 5	2.9 9	416.086	2 ⁻			
		224.01 15	0.29	373.092	(1) ⁻			
		267.19 5	8.0 17	329.774	5 ⁻			
		416.47 5	23 5	180.467	4 ⁻			
		425.99 3	6.9 20	171.0738	3 ⁻			
		542.86 20	100 26	54.2391	2 ⁻	E2+M1	0.019 7	
598.448	4 ⁺	76.4663 14	85 8	521.982	3 ⁺			
		134.00 3	2.5	464.501	2 ⁺			
		268.15 9	18 5	329.774	5 ⁻			
		408.8 [#] 6	60 [#] 31	190.9021	3 ⁺			I _γ : from I(409γ):I(427 from 598 level)=0.5 I:0.83 20 in (n,γ) E=thermal: γγ coin and I(427γ) here.
		418.08 18	50 15	180.467	4 ⁻			
		427.0 2	100	171.0738	3 ⁻			
605.047	2 ⁺	83.049 ^a 14	<26 ^a	521.982	3 ⁺			
		129.353 7	32 6	475.680	(3) ⁻			
		140.544 10	36 4	464.501	2 ⁺			
		179.032 6	100 16	426.025	1 ⁺	(M1,E2)	0.43 8	
		188.98 3	28 6	416.086	2 ⁻			
		231.957 14	96 20	373.092	(1) ⁻			
		433.92 18	68	171.0738	3 ⁻			Other I(434γ):I(232γ)=38 5:100 22 from 2007ChZX in (n,γ) E=thermal.
628.418	(2 ⁻ ,3 ⁻)	84.742 14	6.7 20	543.672	2 ⁻			
		152.71 3	4.2 8	475.680	(3) ⁻			

Adopted Levels, Gammas (continued)

						$\gamma(^{166}\text{Ho})$ (continued)			Comments
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^{\ddagger\ddagger}$	E_f	J_f^π	Mult. [†]	$\alpha^\&$		
628.418	$(2^-, 3^-)$	198.31 ^a 5	<5 ^a	430.031	2 ⁺				
		212.30 ^a 6	<8.0 ^a	416.086	2 ⁻				
		255.37 3	15 3	373.092	(1) ⁻				
		437.3 3	10	190.9021	3 ⁺				
		457.37 7	100 20	171.0738	3 ⁻				
634.314	5 ⁺	46.232 4	60 10	588.083	6 ⁺				
		75.753 16	35 10	558.571	4 ⁺				
		86.359 11	50 13	547.934	4 ⁺				
		152.45 3	8.0 25	481.846	3 ⁺				
		180.545 5	100 15	453.771	(6) ⁺	(M1,E2)	0.42 8		
638.235	(2^-)	94.643 11	67 10	543.672	2 ⁻				
		116.197 13	20 5	521.982	3 ⁺				
		173.47 12	6.7	464.501	2 ⁺				
		208.34 4	22 3	430.031	2 ⁺				
		265.12 5	60 13	373.092	(1) ⁻				
644.29	7 ⁻	467.3 3	100 30	171.0738	3 ⁻				
		114.50 ^a 3	<5 ^a	529.816	(6) ⁻				
		213.04 6	5	431.239	(5) ⁻				
		506.8 3	100	137.729	8 ⁻				
651.5	$(3^+, 4^-)$	304.1 [#] 7	100 [#] 38	348.257	5 ⁺				
		596.6 [#] 6	50 [#] 13	54.2391	2 ⁻				
654.818	(5^+)	96.265 20	3.3 10	558.571	4 ⁺				
		183.96 4	8.3 25	470.841	5 ⁺				
		201.08 3	6.7 13	453.771	(6) ⁺				
		282.80 8	10 3	371.985	4 ⁺				
		306.49 3	40 8	348.257	5 ⁺				
		359.7 2	13 4	295.085	(6) ⁺				
		394.5 ^c 2	17	260.6625	4 ⁺				
657.995	(5^-)	463.9 3	100 20	190.9021	3 ⁺				
		182.302 16	13.7 21	475.680	(3) ⁻	[E2]	0.3329		
		328.245 15	100 10	329.774	5 ⁻				
		477.4 3	27	180.467	4 ⁻				
659.01	(0^-)	285.81 ^a 8	100 ^a	373.092	(1) ⁻				Other I_γ : $I(477\gamma):I(328\gamma)=23\ 8:100\ 23$ in (n, γ) E=thermal: $\gamma\gamma$ coin.
662.169	3 ⁺	94.529 11	15 4	567.624	(1) ⁺				
		118.49 2	11	543.672	2 ⁻				
		197.677 10	74 11	464.501	2 ⁺				
		232.286 9	100 19	430.031	2 ⁺				
		236.31 ^a 8	<14 ^a	426.025	1 ⁺				
		246.07 2	74 15	416.086	2 ⁻				
		472.2 5	52	190.9021	3 ⁺				
		607.7 7	41	54.2391	2 ⁻				

Adopted Levels, Gammas (continued) $\gamma(^{166}\text{Ho})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^{\ddagger\ddagger}$	E_f	J_f^π	Mult. [†]	$\alpha^\&$	Comments
668.005	(4) ⁻	70.988 <i>10</i>	14 <i>3</i>	597.015	(3) ⁻			
		120.36 <i>3</i>	0.8	547.934	4 ⁺			
		124.350 <i>15</i>	3.1 <i>6</i>	543.672	2 ⁻			
		186.147 <i>6</i>	9.2 <i>14</i>	481.846	3 ⁺			
		192.33 <i>2</i>	5.4 <i>11</i>	475.680	(3) ⁻			
		197.11 <i>5</i>	2.3	470.841	5 ⁺			
		295.99 <i>8</i>	3.1 <i>9</i>	371.985	4 ⁺			
		338.20 <i>4</i>	11.5 <i>18</i>	329.774	5 ⁻			
		487.58 <i>6</i>	100 <i>15</i>	180.467	4 ⁻	M1	0.0343	
		496.9 <i>2</i>	23	171.0738	3 ⁻			
		613.8 <i>4</i>	54 <i>16</i>	54.2391	2 ⁻			Other I_γ : 167 <i>33</i> in (n, γ) E=thermal: $\gamma\gamma$ coin suggest that γ is contaminated in that reaction.
671.749	(4) ⁺	(16.97)		654.818	(5) ⁺			
		113.17 <i>2</i>	2.7	558.571	4 ⁺			
		123.81 <i>2</i>	1.3	547.934	4 ⁺			
		189.89 <i>5</i>	1.3	481.846	3 ⁺			
		218.00 <i>6</i>	5.3	453.771	(6) ⁺			
		241.76 <i>5</i>	6.7 <i>13</i>	430.031	2 ⁺			
		299.88 <i>17</i>	4	371.985	4 ⁺			
		323.42 <i>7</i>	16 <i>3</i>	348.257	5 ⁺			
		411.09 <i>3</i>	100 <i>31</i>	260.6625	4 ⁺			
683.805	(3) ⁻	86.765 <i>11</i>	29 <i>7</i>	597.015	(3) ⁻			
		135.883 <i>4</i>	29 <i>4</i>	547.934	4 ⁺			
		140.117 <i>5</i>	100 <i>11</i>	543.672	2 ⁻	M1(+E2)	0.91 <i>9</i>	
		201.95 <i>3</i>	14 <i>3</i>	481.846	3 ⁺			
		219.44 <i>6</i>	23 <i>6</i>	464.501	2 ⁺			
		253.78 <i>3</i>	34 <i>7</i>	430.031	2 ⁺			
		267.82 <i>9</i>	31 <i>6</i>	416.086	2 ⁻			
		423.39 ^{<i>a</i>} <i>18</i>	<46 ^{<i>a</i>}	260.6625	4 ⁺			
693.388	(2,3,4)	96.381 <i>20</i>	100 <i>30</i>	597.015	(3) ⁻			
		211.53 <i>6</i>	50	481.846	3 ⁺			
693.638	5 ⁺	95.190 <i>3</i>	100 <i>16</i>	598.448	4 ⁺			
		171.67 <i>3</i>	12.0 <i>24</i>	521.982	3 ⁺			
		512.7 ^{<i>b</i>} <i>3</i>	12 ^{<i>b</i>}	180.467	4 ⁻			
701.5		369.6 ^{<i>#</i>} <i>10</i>	100 ^{<i>#</i>}	329.774	5 ⁻			
704.962	(3) ⁻	99.584 ^{<i>a</i>} <i>16</i>	<4.1 ^{<i>a</i>}	605.047	2 ⁺			
		107.71 <i>3</i>	5.0 <i>13</i>	597.015	(3) ⁻			
		109.241 <i>12</i>	5.0 <i>10</i>	595.726	(1) ⁻			
		161.42 <i>2</i>	5.0 <i>10</i>	543.672	2 ⁻			
		229.00 ^{<i>a</i>} <i>7</i>	<10.8 ^{<i>a</i>}	475.680	(3) ⁻			
		274.77 <i>7</i>	22 <i>4</i>	430.031	2 ⁺			

Adopted Levels, Gammas (continued)

$\gamma(^{166}\text{Ho})$ (continued)

<u>E_i(level)</u>	<u>J^{π}_i</u>	<u>E_{γ}[†]</u>	<u>I_{γ}[‡]</u>	<u>E_f</u>	<u>J^{π}_f</u>	<u>Mult.[†]</u>
704.962	(3 ⁻)	288.60 7	20	416.086	2 ⁻	
		533.5 3	100 30	171.0738	3 ⁻	
715.4		715.4 [#] 8	100 [#]	0.0	0 ⁻	
719.370	(4) ⁺	57.19 1	9.4	662.169	3 ⁺	
		248.77 9	3.5 7	470.841	5 ⁺	
		347.24 8	11.8 24	371.985	4 ⁺	
		455.60 6	100 15	263.7876	5 ⁺	M1(+E2)
721.98	(6 ⁺)	426.89 15	100	295.085	(6) ⁺	
723.239	(7 ⁺)	135.15 2	100 30	588.083	6 ⁺	
		208.90 4	75 15	514.362	(7 ⁺)	
725.68	(2 ⁻)	97.253 ^a 20	<3.3 ^a	628.418	(2 ⁻ ,3 ⁻)	
		182.04 4	4	543.672	2 ⁻	
		309.59 6	22 4	416.086	2 ⁻	
		352.28 12	29 6	373.092	(1) ⁻	
		554.3 ^b 4	100 ^b 31	171.0738	3 ⁻	
		643.1 8	89 27	82.4707	1 ⁻	
732.513	(6 ⁺)	98.200 15	50 13	634.314	5 ⁺	
		155.42 ^a 3	<50 ^a	577.208	7 ⁺	
		278.69 10	100 30	453.771	(6) ⁺	
736.430	4 ⁺	74.261 9	41 14	662.169	3 ⁺	
		131.41 3	4.6	605.047	2 ⁺	
		137.99 4	3.2	598.448	4 ⁺	
		214.442 9	100 14	521.982	3 ⁺	M1(+E2)
		260.75 5	73 11	475.680	(3) ⁻	
		406.83 16	59 12	329.774	5 ⁻	
		475.8 ^a 3	<68 ^a	260.6625	4 ⁺	
		564.8 3	91	171.0738	3 ⁻	
742.02	(4 ⁻)	113.644 4	17.6 24	628.418	(2 ⁻ ,3 ⁻)	
		145.00 3	2.4	597.015	(3) ⁻	
		198.31 ^a 5	3.5 ^a	543.672	2 ⁻	
		266.53 ^a 5	<34 ^a	475.680	(3) ⁻	
		412.1 ^a 2	<85 ^a	329.774	5 ⁻	
		481.31 8	100 20	260.6625	4 ⁺	
757.707	(5 ⁻)	99.584 ^a 16	<50 ^a	657.995	(5 ⁻)	
		160.63 2	80 16	597.015	(3) ⁻	
		209.69 4	40 12	547.934	4 ⁺	
		380.1 2	100 30	377.806	(6 ⁻)	
		386.6 3	96 16	371.985	4 ⁺	
		577.0 ^a 3	<1680 ^a	180.467	4 ⁻	
760.345	(3 ⁻)	92.355 13	9.8 20	668.005	(4) ⁻	

Adopted Levels, Gammas (continued)

$\gamma(^{166}\text{Ho})$ (continued)						
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^{\ddagger\ddagger}$	E_f	J_f^π	Mult. [†]
760.345	(3 ⁻)	163.352 7	100 10	597.015	(3) ⁻	
		216.85 6	7.8	543.672	2 ⁻	
		430.31 18	25	329.774	5 ⁻	
		499.5 4	<20	260.6625	4 ⁺	Line is complex in (n, γ) E=thermal (1967Mo05).
		570.0 3	39	190.9021	3 ⁺	
		579.9 7	98 59	180.467	4 ⁻	
769.78	(5 ⁺)	247.68 9	4.3 13	521.982	3 ⁺	
		316.10 9	12.9	453.771	(6) ⁺	
		390.0 2	26 6	379.547	6 ⁺	
		509.0 2	100	260.6625	4 ⁺	
771.94	(6 ⁺)	117.264 ^a 3	<88 ^a	654.818	(5 ⁺)	
		423.39 ^a 18	<64 ^a	348.257	5 ⁺	
		442.17 8	100 28	329.774	5 ⁻	
774.522	(1 ⁻)	90.720 5	36	683.805	(3) ⁻	
		115.51 3	9	659.01	(0 ⁻)	
		358.4 3	45	416.086	2 ⁻	
		401.31 10	100 27	373.092	(1) ⁻	
788.618	(6 ⁻)	130.641 16	11	657.995	(5 ⁻)	
		225.722 9	78 11	562.890	4 ⁻	
		458.74 22	100 33	329.774	5 ⁻	
792.789	(4 ⁻)	154.71 3	8.3 17	638.235	(2 ⁻)	
		195.687 14	27 4	597.015	(3) ⁻	
		230.11 5	10.0 20	562.890	4 ⁻	
		317.28 3	73 10	475.680	(3) ⁻	
		376.91 ^a 14	<48 ^a	416.086	2 ⁻	
		612.0 5	100	180.467	4 ⁻	
806.56	(5 ⁺)	324.74 7	18 3	481.846	3 ⁺	
		335.61 8	100 19	470.841	5 ⁺	I_γ : branching may be overestimated; independent (n, γ) E=thermal studies report I_γ data that differ by an order of magnitude.
		433.9 9	2.4 8	371.985	4 ⁺	
		546.0 5	3.2 10	260.6625	4 ⁺	
807.011	6 ⁺	113.373 3	100	693.638	5 ⁺	
815.139	3 ⁺	222.634 7	37 4	592.501	(3 ⁺)	
		256.60 2	43 7	558.571	4 ⁺	M1(+E2)
		267.19 5	47 10	547.934	4 ⁺	
		350.61 12	11.7 23	464.501	2 ⁺	
		385.0 2	6.7	430.031	2 ⁺	
		388.8 3	13 5	426.025	1 ⁺	
		442.9 3	67 20	371.985	4 ⁺	I_γ : 62 8 from (n, γ) E=thermal: $\gamma\gamma$ coin.
		485.2 ^c 10	13 5	329.774	5 ⁻	E_γ, I_γ : from (n, γ) E=thermal: $\gamma\gamma$ coin. Placement is considered doubtful because it implies M2 multipolarity which seems unlikely.

Adopted Levels, Gammas (continued)

$\gamma(^{166}\text{Ho})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^{\ddagger\dagger}$	E_f	J_f^π	Comments
815.139	3 ⁺	554.3 ^b 3	25 ^b 8	260.6625	4 ⁺	I _γ : 28 5 from (n,γ) E=thermal: γγ coin. I _γ : 100 8 from (n,γ) E=thermal: γγ coin.
		624.0 4	100 30	190.9021	3 ⁺	
824.62	(3 ⁻ ,4 ⁻)	266.03 5	35 8	558.571	4 ⁺	
		563.3 [#] 5	36 [#] 7	260.6625	4 ⁺	
		633.5 4	100 30	190.9021	3 ⁺	
832.197	5 ⁺	95.767 3	75 8	736.430	4 ⁺	
		170.09 ^a 3	<8 ^a	662.169	3 ⁺	
		233.79 5	100 20	598.448	4 ⁺	
		284.26 12	67 20	547.934	4 ⁺	
		652.2 7		180.467	4 ⁻	E _γ : from (n,γ) E=thermal: γγ coin.
837.717	(4 ⁻)	169.712 5	100 8	668.005	(4) ⁻	
		577.0 ^a 3	<333 ^a	260.6625	4 ⁺	
848.46	(7 ⁺)	553.37 21	100	295.085	(6) ⁺	
868.24	(4 ⁻)	305.36 15	70 20	562.890	4 ⁻	
		392.2 5	55 15	475.680	(3) ⁻	
		538.6 4	100 30	329.774	5 ⁻	
870.13	(4 ⁻ ,5 ⁻ ,6 ⁻)	235.80 5	100	634.314	5 ⁺	
		816.1 ^{#c} 4	#	54.2391	2 ⁻	Placement tentatively suggested by evaluator; E _γ is not consistent with placement from 876 level, but (n,γ) E=thermal: γγ coin establishes that it deexcites a level in the vicinity of 873.6.
876.37	(3 ⁻)	450.3 3		426.025	1 ⁺	Reported only in (n,γ) E=thermal; not accompanied in that reaction by any of the transitions deexciting this level in (n,γ) E=thermal: γγ coin.
		546.6 [#] 5	100 [#] 20	329.774	5 ⁻	
		614.6 [#] 9	20 [#] 7	260.6625	4 ⁺	
		692.4 [#] 7	20 [#] 7	180.467	4 ⁻	
		790.0 [#] 10	33 [#] 13	82.4707	1 ⁻	
881.040	3 ⁽⁻⁾	155.42 ^a 3	<12 ^a	725.68	(2) ⁻	
		242.90 2	65 12	638.235	(2) ⁻	
		404.7 6	19 8	475.680	(3) ⁻	
		620.5 ^{#c} 7	20 [#] 7	260.6625	4 ⁺	Reported in (n,γ) E=thermal: γγ coin only; may deexcite a different level in the vicinity of the 882 level.
		690.2 ^{#c} 4	23 [#] 7	190.9021	3 ⁺	Reported in (n,γ) E=thermal: γγ coin only; may deexcite a different level in the vicinity of the 882 level.
		709.6 6	54 15	171.0738	3 ⁻	
		798.6 4	100 31	82.4707	1 ⁻	
		827.1 3	73 23	54.2391	2 ⁻	
883.94	(6 ⁺)	114.50 ^a 3	<50 ^a	769.78	(5) ⁺	
		164.57 4	100 30	719.370	(4) ⁺	
		212.30 ^a 6	<240 ^a	671.749	(4) ⁺	

Adopted Levels, Gammas (continued)

<u>$\gamma(^{166}\text{Ho})$ (continued)</u>						Comments
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^{\ddagger\dagger}$	E_f	J_f^π	
885.371	+	191.961 <i>11</i>	100 <i>15</i>	693.388	(2,3,4)	
		217.23 6	31	668.005	(4) ⁻	
891.134	(4 ⁺)	75.985 8	100	815.139	3 ⁺	
		236.31 ^a 8	<56 ^a	654.818	(5 ⁺)	
		519.0 [#] 7	[#]	371.985	4 ⁺	I_γ : see comment on 626.6 γ .
		626.6 [#] 7	[#]	263.7876	5 ⁺	I_γ : I(627 γ):I(519 γ)=0.4 1:1.2 4 in (n, γ) E=thermal: $\gamma\gamma$ coin.
905.544	(2 ⁺)	145.228 7	54 4	760.345	(3 ⁻)	
		312.90 8	46 <i>15</i>	592.501	(3 ⁺)	
		475.8 ^a 3	<58 ^a	430.031	2 ⁺	
		714.7 2	100 <i>31</i>	190.9021	3 ⁺	
		733.94 <i>21</i>	9.2 <i>27</i>	171.0738	3 ⁻	
910.49	(6 ⁺)	191.12 ^c 3	100	719.370	(4) ⁺	
925.21	(5 ⁺)	206.15 ^a 2	<10 ^a	719.370	(4) ⁺	
		661.0 6	100 <i>30</i>	263.7876	5 ⁺	
935.12	(5 ⁻)	97.253 ^a <i>20</i>	<75 ^a	837.717	(4 ⁻)	
		174.77 4	100	760.345	(3 ⁻)	
942.524	(6 ⁺)	110.327 <i>12</i>	100 <i>20</i>	832.197	5 ⁺	
		206.15 ^a 2	<145 ^a	736.430	4 ⁺	
945.86		187.93 5	100	757.707	(5 ⁻)	
947.1		774.9 [#] 3	54 [#] 8	171.0738	3 ⁻	
		892.4 [#] 5	100 [#] <i>23</i>	54.2391	2 ⁻	
953.4	(3 ⁻ ,4 ⁻)	624.6 [#] <i>10</i>	100 [#] <i>40</i>	329.774	5 ⁻	
		898.1 [#] <i>10</i>	80 [#] <i>40</i>	54.2391	2 ⁻	
961.08	3 ⁺	534.9 4	100	426.025	1 ⁺	Not observed in (n, γ) E=thermal: $\gamma\gamma$ coin. Placement from 961 level established by $\gamma\gamma$ coin; however, γ could have an additional placement.
		542.8 8	2.0 7	416.086	2 ⁻	
		700.8 3	20 7	260.6625	4 ⁺	
		875.9 ^{#c} 9	8 [#] 3	82.4707	1 ⁻	I_γ : from $I_\gamma(701\gamma)$ here and $I(701\gamma):I(876\gamma)=100$ 15:38 15 in (n, γ) E=thermal: $\gamma\gamma$ coin. However, placement requires M2 multipolarity for this γ so it is shown as uncertain.
976.1	1 ⁺	889.2 [#] <i>10</i>	100 [#] <i>40</i>	82.4707	1 ⁻	
		921.1 [#] 9	60 [#] <i>20</i>	54.2391	2 ⁻	
985.20	(5 ⁺)	170.09 ^a 3	<100 ^a	815.139	3 ⁺	
		215.44 9	100	769.78	(5 ⁺)	
		313.48 ^a 6	<1600 ^a	671.749	(4 ⁺)	
996.8	(4 ⁺ ,5,6 ⁺)	543.5 <i>10</i>	100 <i>42</i>	453.771	(6) ⁺	
		624.2 5	50 <i>17</i>	371.985	4 ⁺	
		736.1 <i>10</i>	17 8	260.6625	4 ⁺	
1004.84	(2 ⁻ ,3 ⁻)	634.3 [#] 8	12 [#] 4	371.985	4 ⁺	

Adopted Levels, Gammas (continued)

$\gamma(^{166}\text{Ho})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^{\ddagger\dagger}$	E_f	J_f^π	Comments
1004.84	(2 ⁻ ,3 ⁻)	824.3 [#] 4	40 [#] 8	180.467	4 ⁻	
		950.0 [#] 4	100 [#] 20	54.2391	2 ⁻	
1010.68	(3 ⁻ ,4,5 ⁻)	679.9 8	100 29	329.774	5 ⁻	
		838.1 6	71 14	171.0738	3 ⁻	
1016.23	(2,3,4 ⁻)	596.1 ^{#c} 7	100 [#] 42	423.651	(7 ⁺)	E_γ : somewhat low for this placement, so placement is shown as uncertain.
		825.1 [#] 11	50 [#] 17	190.9021	3 ⁺	
		961.2 [#] 5	17 [#] 8	54.2391	2 ⁻	
1023.3		831.3 [#] 12	67 [#] 33	190.9021	3 ⁺	
		842.8 [#] 7	100 [#] 33	180.467	4 ⁻	
1028.7		552.6 [#] 9	100 [#]	475.680	(3) ⁻	
1029.0		599.5 [#] 4	100 [#] 19	430.031	2 ⁺	
		765.3 [#] 11	15 [#] 8	263.7876	5 ⁺	
1030.38	(4 ⁺)	600.8 7	18 5	430.031	2 ⁺	
		681.1 ^{#c} 6	50 [#] 14	348.257	5 ⁺	I_γ : from I(840 γ):I(948 γ)=2.2 9:1.1 3 in (n, γ) E=thermal: $\gamma\gamma$ coin. Branch should have been seen in other studies, but was not.
		701.1 5	12 4	329.774	5 ⁻	
		770.5 4	46 15	260.6625	4 ⁺	
		839.9 7	100 31	190.9021	3 ⁺	
		849.5 7	12 4	180.467	4 ⁻	
		858.0 5	31 8	171.0738	3 ⁻	
1035.8	(0 ⁻ ,1,2 ⁻)	664.3 [#] 8	11 [#] 3	373.092	(1) ⁻	
		952.4 [#] 9	54 [#] 23	82.4707	1 ⁻	
		981.6 [#] 9	11 [#] 6	54.2391	2 ⁻	
		1036.2 [#] 8	100 [#] 9	0.0	0 ⁻	
1054.87		999.6 [#] 11	100 [#]	54.2391	2 ⁻	
1060.5		689.1 [#] 1	100 [#] 8	371.985	4 ⁺	
		798.1 [#] 9	3.8 [#] 19	263.7876	5 ⁺	
1062.7	2,4	368.45 ^a 16	^a	693.388	(2,3,4)	
		586.1 [#] 2	55 [#] 7	475.680	(3) ⁻	
		646.1 [#] 2	100 [#] 12	416.086	2 ⁻	
		716.0 [#] 7	14 [#] 4	348.257	5 ⁺	
		734.0 [#] 7	8 [#] 3	329.774	5 ⁻	
		871.8 [#] 9	2.7 [#] 14	190.9021	3 ⁺	
		881.1 [#] 9	6.8 [#] 27	180.467	4 ⁻	
		979.3 [#] 7	12 [#] 4	82.4707	1 ⁻	

Adopted Levels, Gammas (continued)

<u>$\gamma(^{166}\text{Ho})$ (continued)</u>						Comments
<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>$E_\gamma^\dagger$</u>	<u>$I_\gamma^{\ddagger\dagger}$</u>	<u>E_f</u>	<u>J_f^π</u>	
1062.7	2,4	1008.5 [#] 4	15 [#] 3	54.2391	2 ⁻	
1086.4	3	368.45 ^a 16		719.370	(4) ⁺	
		715.6 [#] 3	100 [#] 20	371.985	4 ⁺	
		826.8 [#] 9	30 [#] 10	260.6625	4 ⁺	
		894.0 [#] 9	20 [#] 10	190.9021	3 ⁺	
		906.9 [#] 7	40 [#] 10	180.467	4 ⁻	
		916.1 [#] 7	40 [#] 10	171.0738	3 ⁻	
		1034.3 [#] 7	50 [#] 20	54.2391	2 ⁻	
1097.45	(6 ⁺)	623.6 ^{#c} 8	83 [#] 33	475.680	(3) ⁻	
		753.1 [#] 10	100 [#] 50	348.257	5 ⁺	
		836.8 [#] 8	50 [#] 17	260.6625	4 ⁺	
1114.67	(5 ⁻)	567.5 [#] 5	11 [#] 3	547.934	4 ⁺	
		661.3 [#] 2	100 [#] 10	453.771	(6) ⁺	
		743.1 [#] 10	1.4 [#] 7	371.985	4 ⁺	
		765.9 [#] 3	22 [#] 3	348.257	5 ⁺	
		853.7 [#] 3	17.2 [#] 21	260.6625	4 ⁺	
		943.2 [#] 9	2.8 [#] 7	171.0738	3 ⁻	
1118.7		595.9 ^{#c} 14	100 [#]	521.982	3 ⁺	Evaluator tentatively places γ from this level rather than the 1114.7 level because it fits this placement better.
1121.41	(3 ⁻ , 4 ⁻)	704.4 [#] 9	100 [#] 38	416.086	2 ⁻	
		791.9 [#] 11	63 [#] 25	329.774	5 ⁻	
		940.0 [#] 6	100 [#] 25	180.467	4 ⁻	
		949.2 [#] 6	75 [#] 25	171.0738	3 ⁻	
1134.97		761.5 [#] 6	50 [#] 13	373.092	(1) ⁻	
		873.9 [#] 6	100 [#] 25	260.6625	4 ⁺	
		942.2 [#] 7	38 [#] 13	190.9021	3 ⁺	
		951.4 [#] 12	50 [#] 13	180.467	4 ⁻	E γ also consistent with placement from the 1131.0 level.
1137.79		957.4 [#] 3	100 [#]	180.467	4 ⁻	
1141.3		950.3 [#] 6	100 [#]	190.9021	3 ⁺	
1154.84	(3,4)	683.4 [#] 4	100 [#] 17	470.841	5 ⁺	E γ fits placement poorly; may deexcite the 1159 level instead.
		701.7 [#] 9	67 [#] 28	453.771	(6) ⁺	
		787.1 [#] 4	78 [#] 17	371.985	4 ⁺	E γ fits placement poorly; may deexcite the 1159 level instead.
		806.5 [#] 7	44 [#] 17	348.257	5 ⁺	

Adopted Levels, Gammas (continued)

$\gamma(^{166}\text{Ho})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^{\ddagger}$	E_f	J_f^π	$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^{\ddagger}$	E_f	J_f^π
1154.84	(3,4)	825.5 [#] 11	28 [#] 11	329.774	5 ⁻	1161.35	(4 ⁺)	898.8 [#] 5	56 [#] 11	263.7876	5 ⁺
		892.1 [#] 8	22 [#] 11	263.7876	5 ⁺			981.0 [#] 7	28 [#] 6	180.467	4 ⁻
		983.3 [#] 6	33 [#] 11	171.0738	3 ⁻			989.6 [#] 3	83 [#] 17	171.0738	3 ⁻
		1099.0 [#] 5	44 [#] 11	54.2391	2 ⁻	1168.4	(4 ⁺ ,5 ⁺)	713.6 [#] 6	100 [#] 25	453.771	(6) ⁺
1161.35	(4 ⁺)	612.7 [#] 6	83 [#] 22	547.934	4 ⁺			976.9 [#] 7	17 [#] 4	190.9021	3 ⁺
		732.1 [#] 5	100 [#] 22	430.031	2 ⁺	1190.13	2 ⁺	712.6 [#] 7	63 [#] 25	475.680	(3) ⁻
		813.3 [#] 6	56 [#] 17	348.257	5 ⁺			928.7 [#] 5	100 [#] 25	260.6625	4 ⁺
		831.3 [#] 7	61 [#] 17	329.774	5 ⁻						

[†] From (n, γ) E=thermal, unless otherwise noted.

[‡] Relative photon intensity normalized to 100 for strongest photon branch deexciting each level.

[#] From ¹⁶⁵Ho(n, γ) E=thermal: $\gamma\gamma$ coin.

@ From ¹⁶⁶Dy β^- decay.

& Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

^a Multiply placed with undivided intensity.

^b Multiply placed with intensity suitably divided.

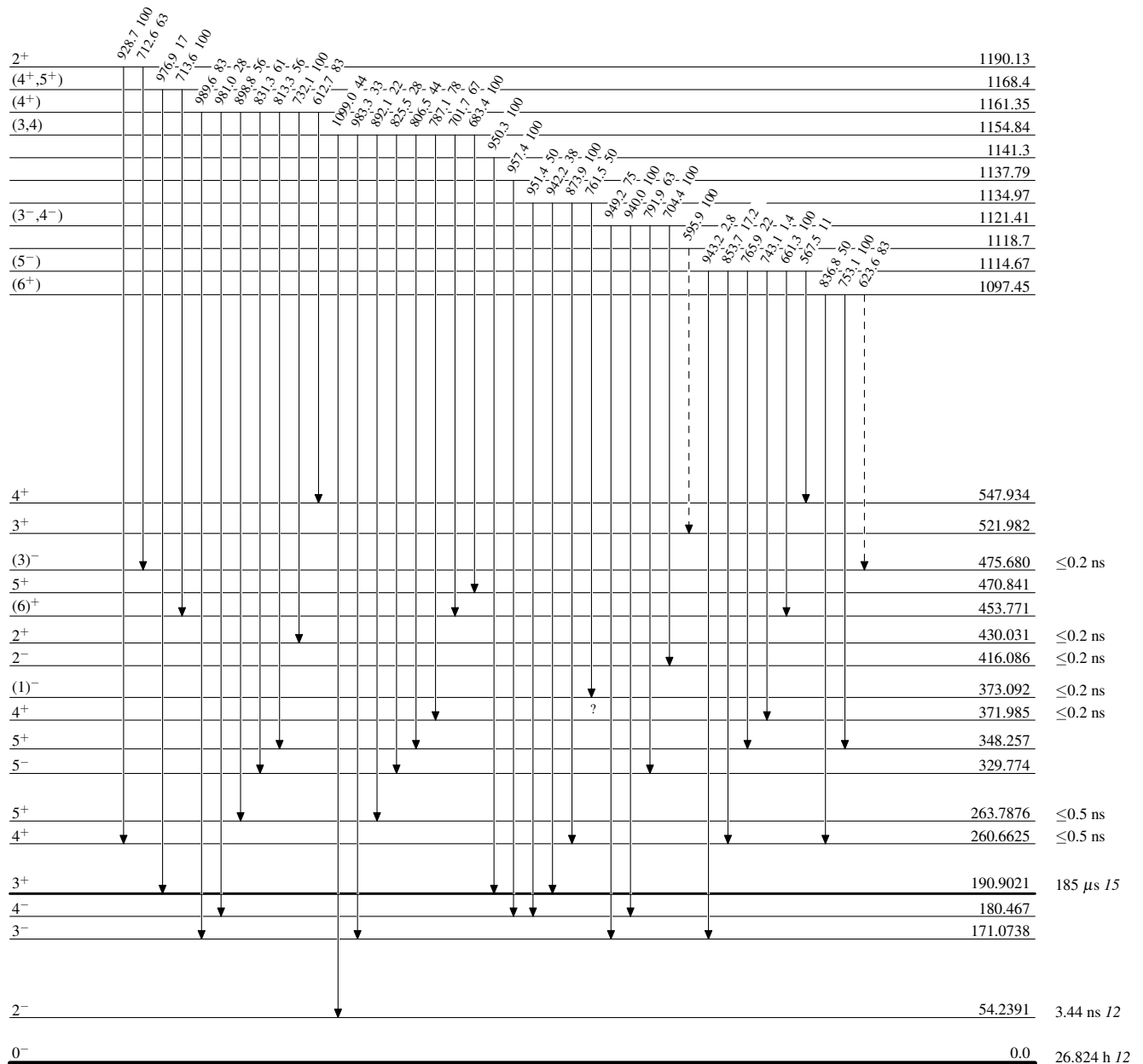
^c Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

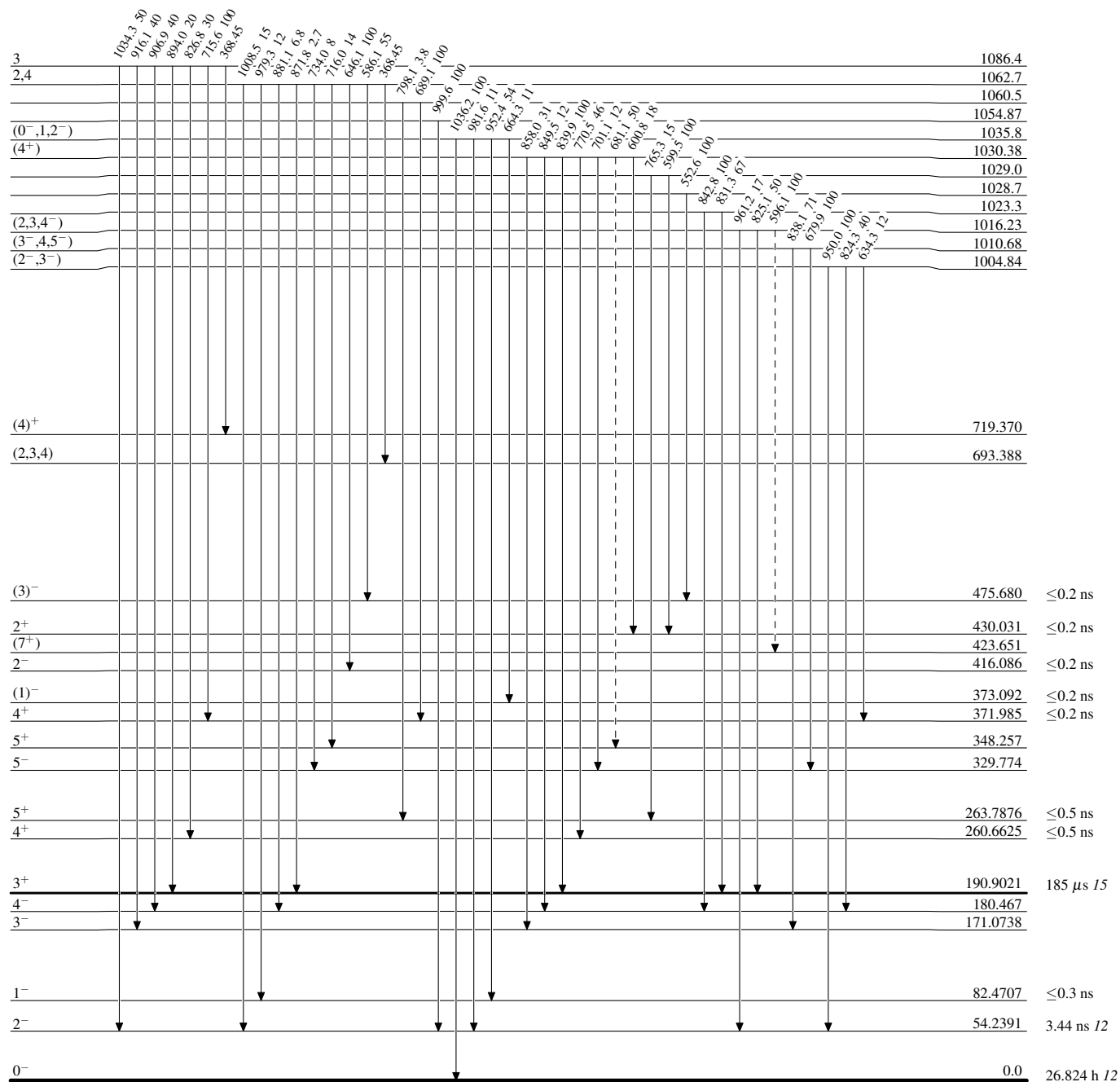
-----► γ Decay (Uncertain)

 $^{166}_{67}\text{Ho}_{99}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

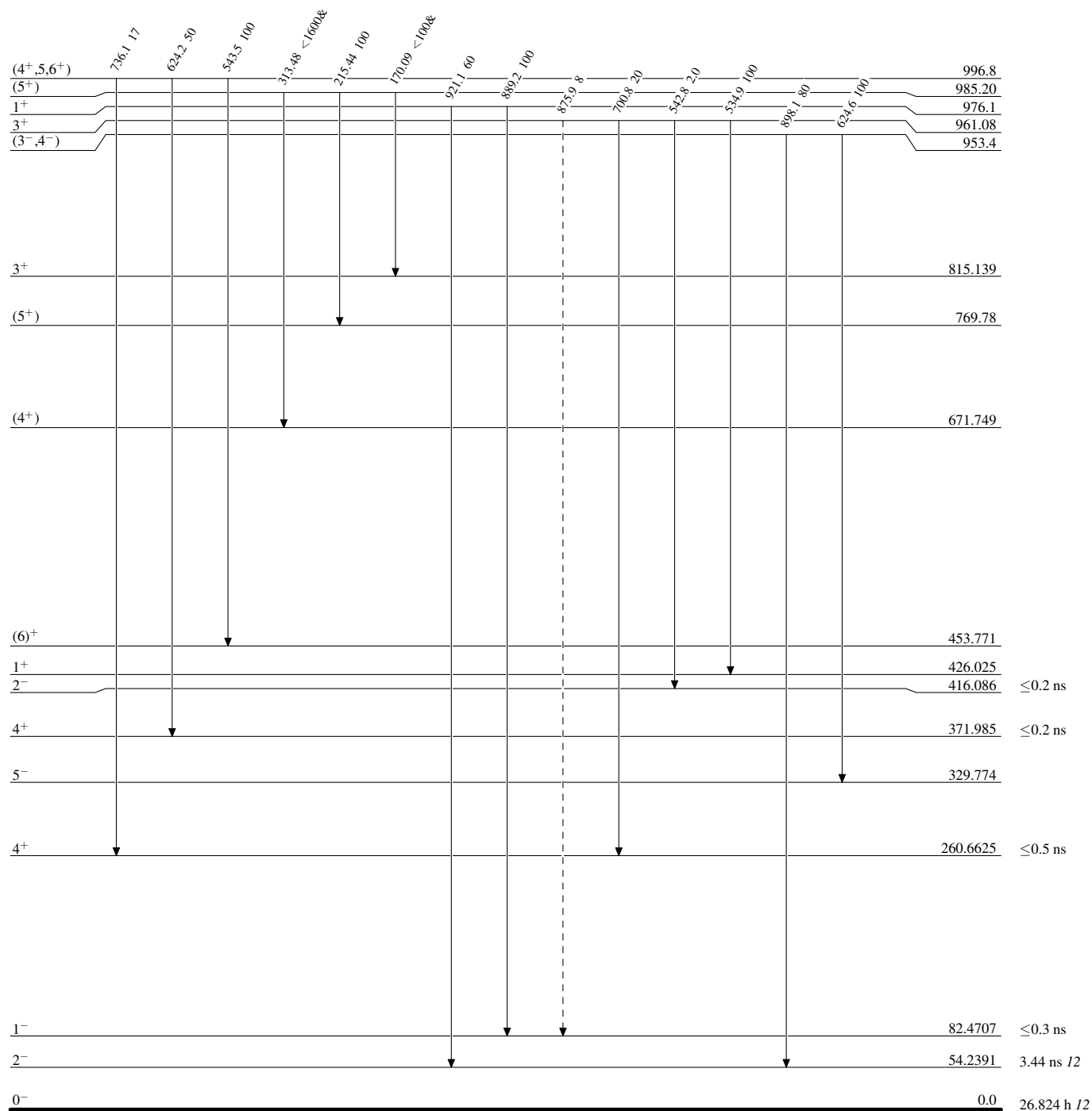
-----► γ Decay (Uncertain) $^{166}_{67}\text{Ho}_{99}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

-----► γ Decay (Uncertain) $^{166}_{67}\text{Ho}_{99}$

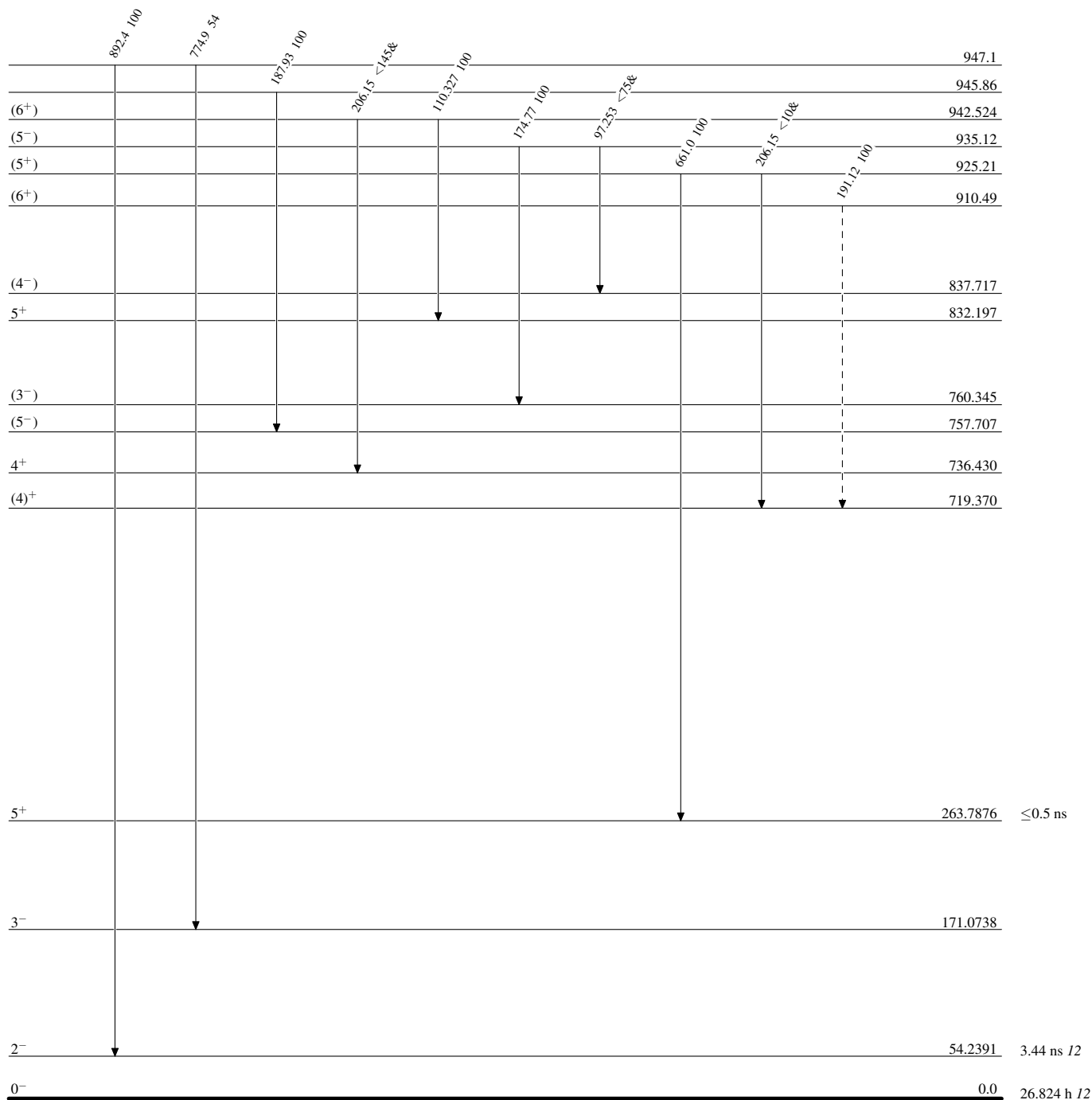
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

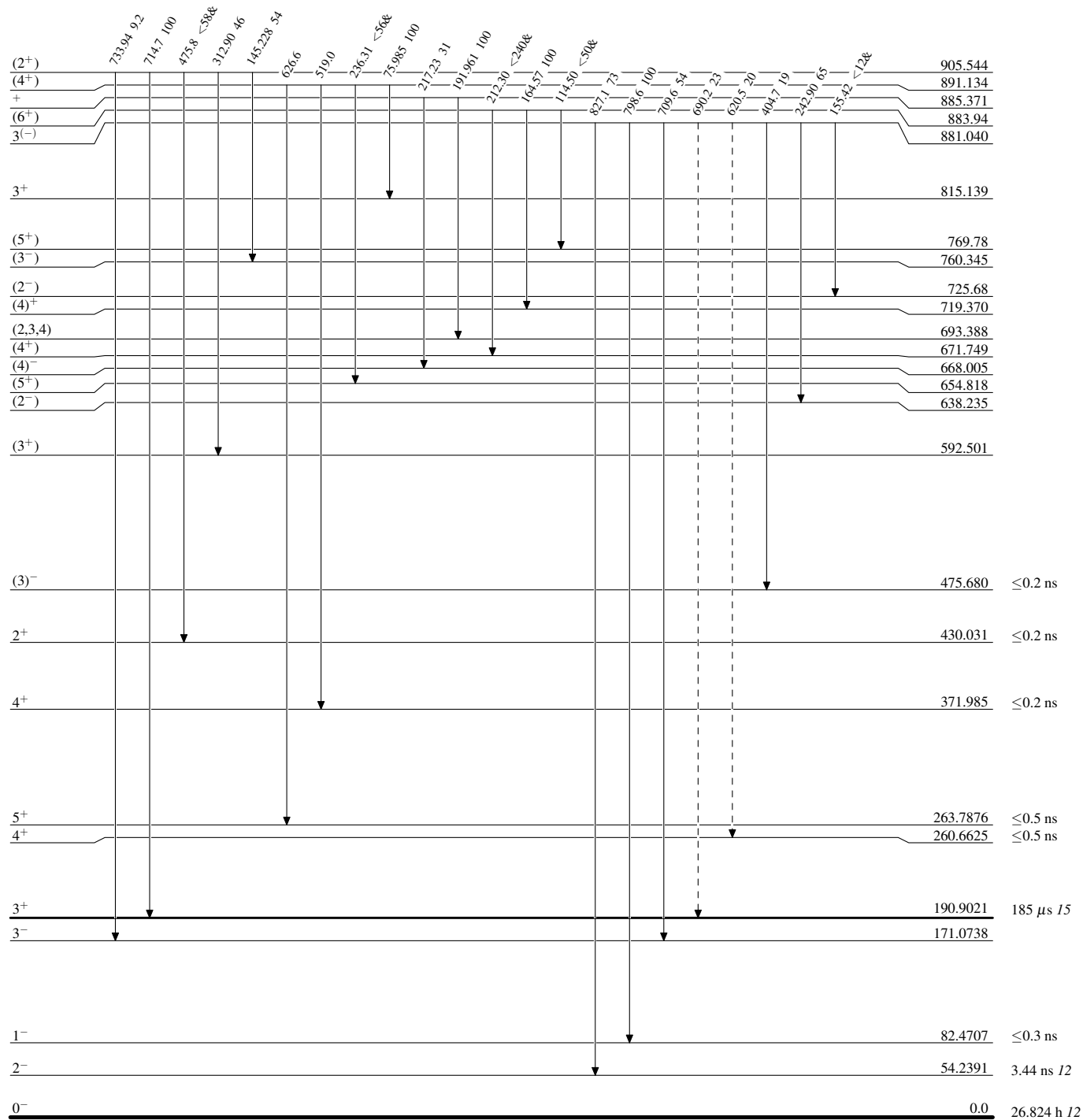
-----► γ Decay (Uncertain)


 $^{166}_{67}\text{Ho}_{99}$

Adopted Levels, Gammas**Level Scheme (continued)**

Legend

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

-----► γ Decay (Uncertain)

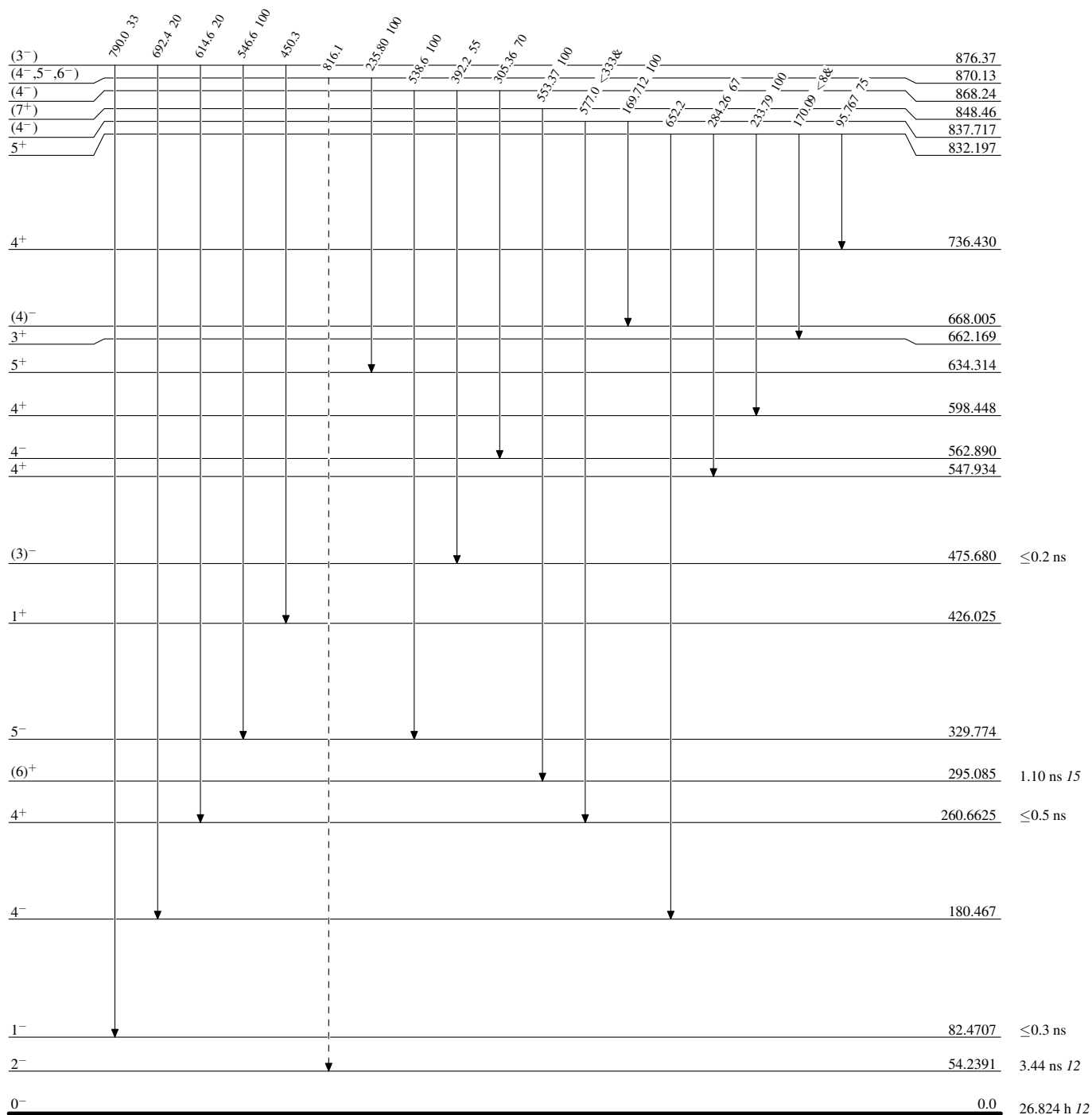
Adopted Levels, Gammas

Level Scheme (continued)

Legend

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

-----► γ Decay (Uncertain)



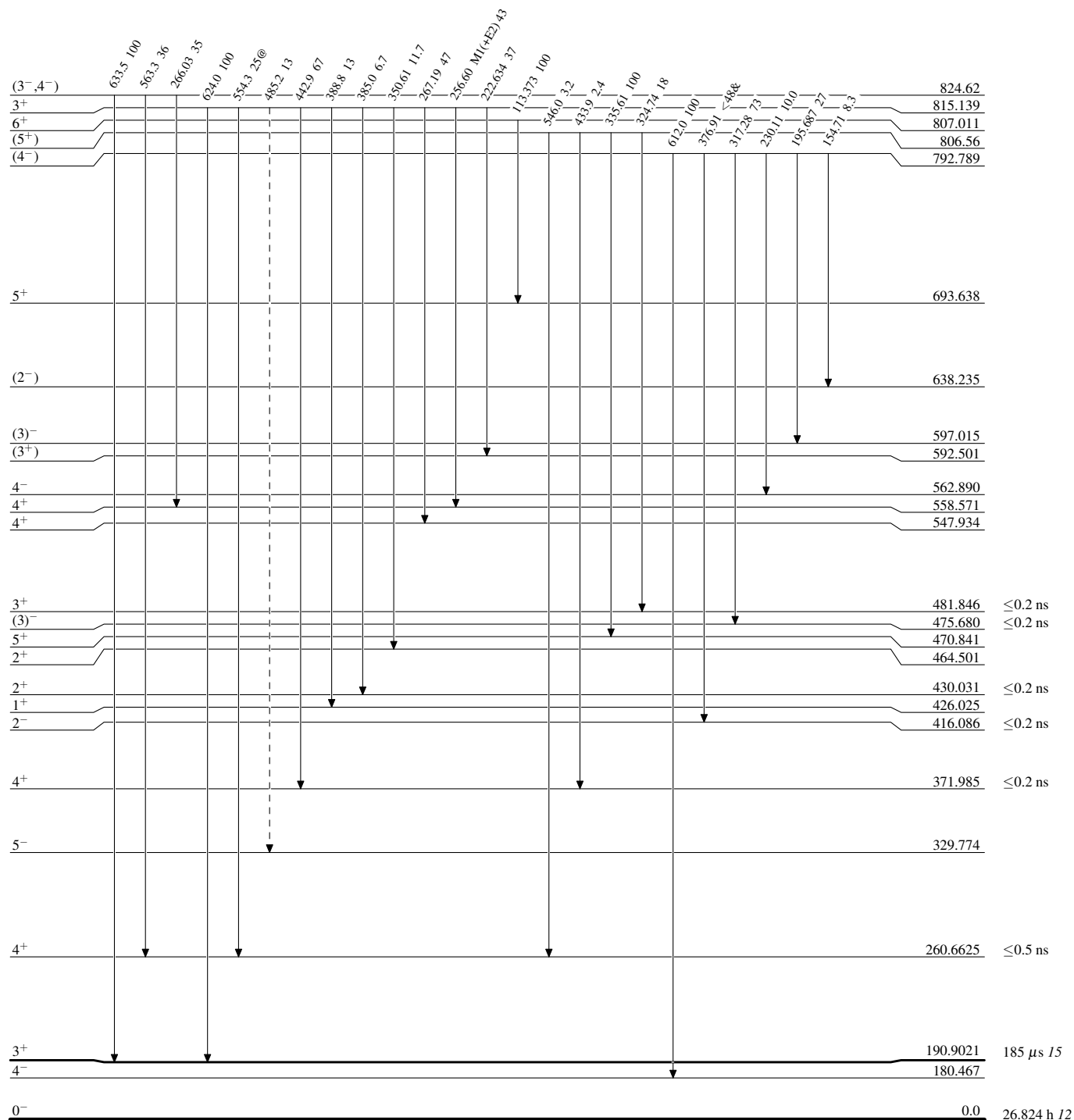
Adopted Levels, Gammas**Level Scheme (continued)**

Legend

Intensities: Relative photon branching from each level

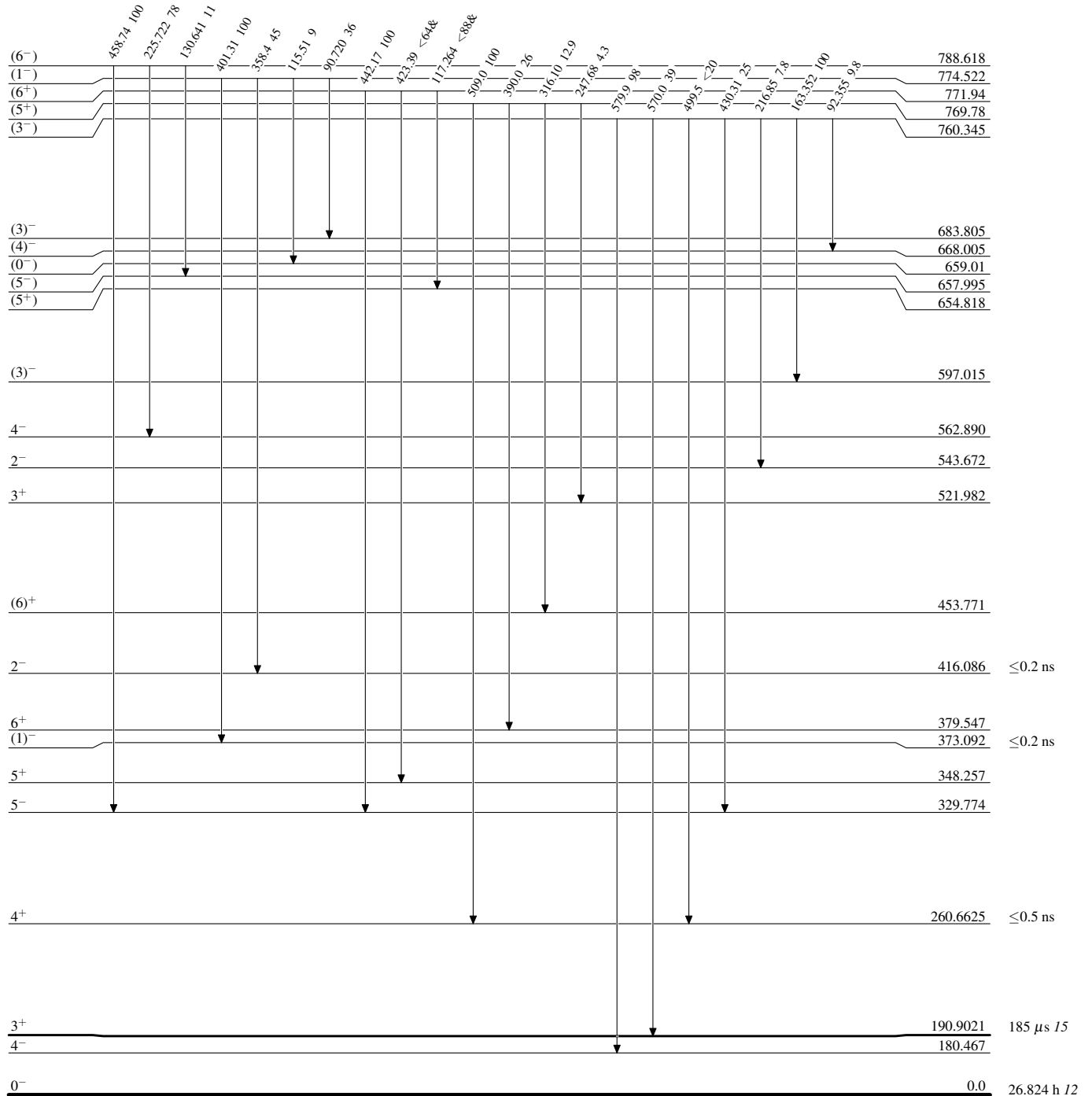
& Multiply placed: undivided intensity given

@ Multiply placed: intensity suitably divided

-----► γ Decay (Uncertain)

Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level
 & Multiply placed: undivided intensity given
 @ Multiply placed: intensity suitably divided

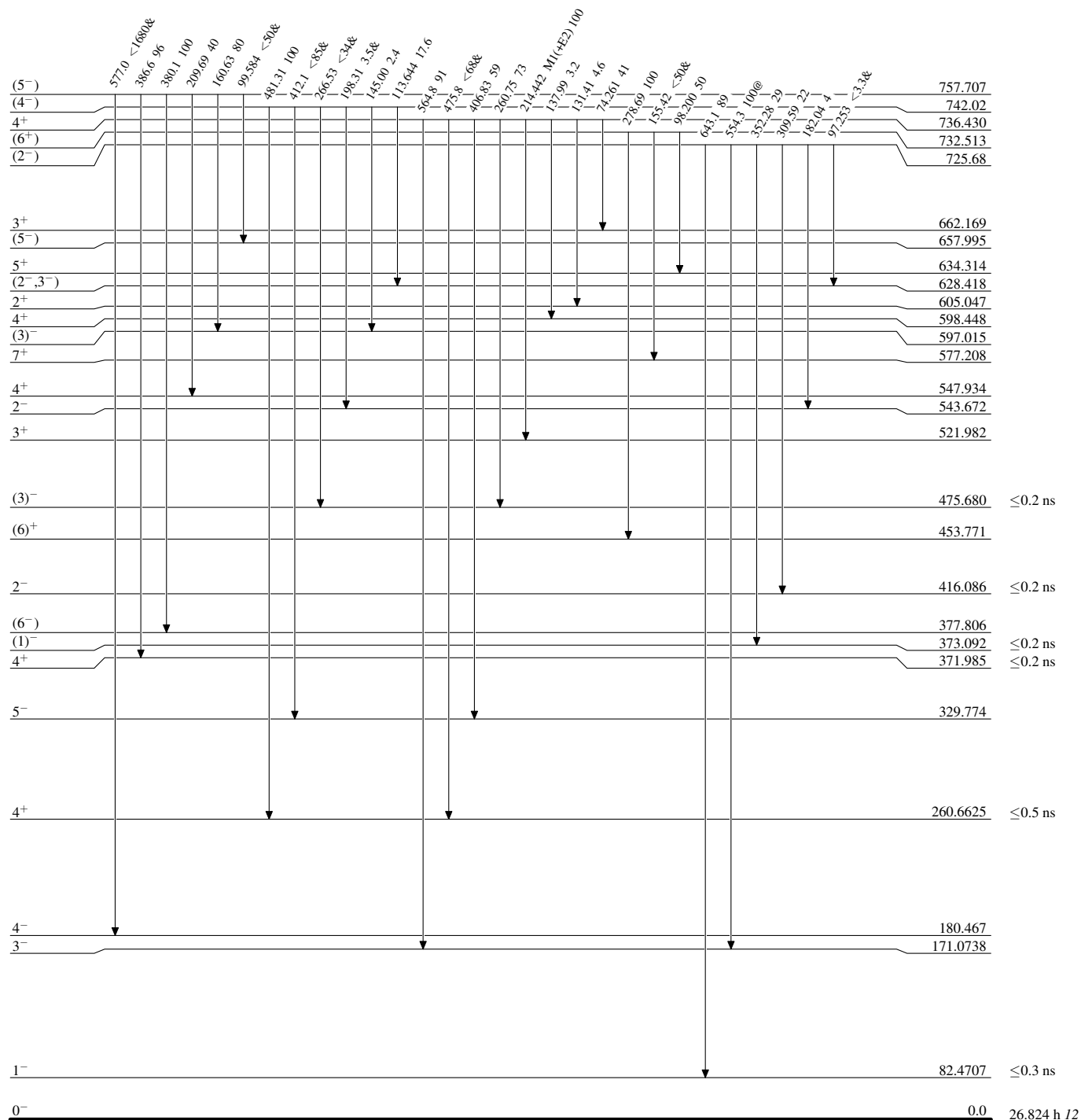


Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level

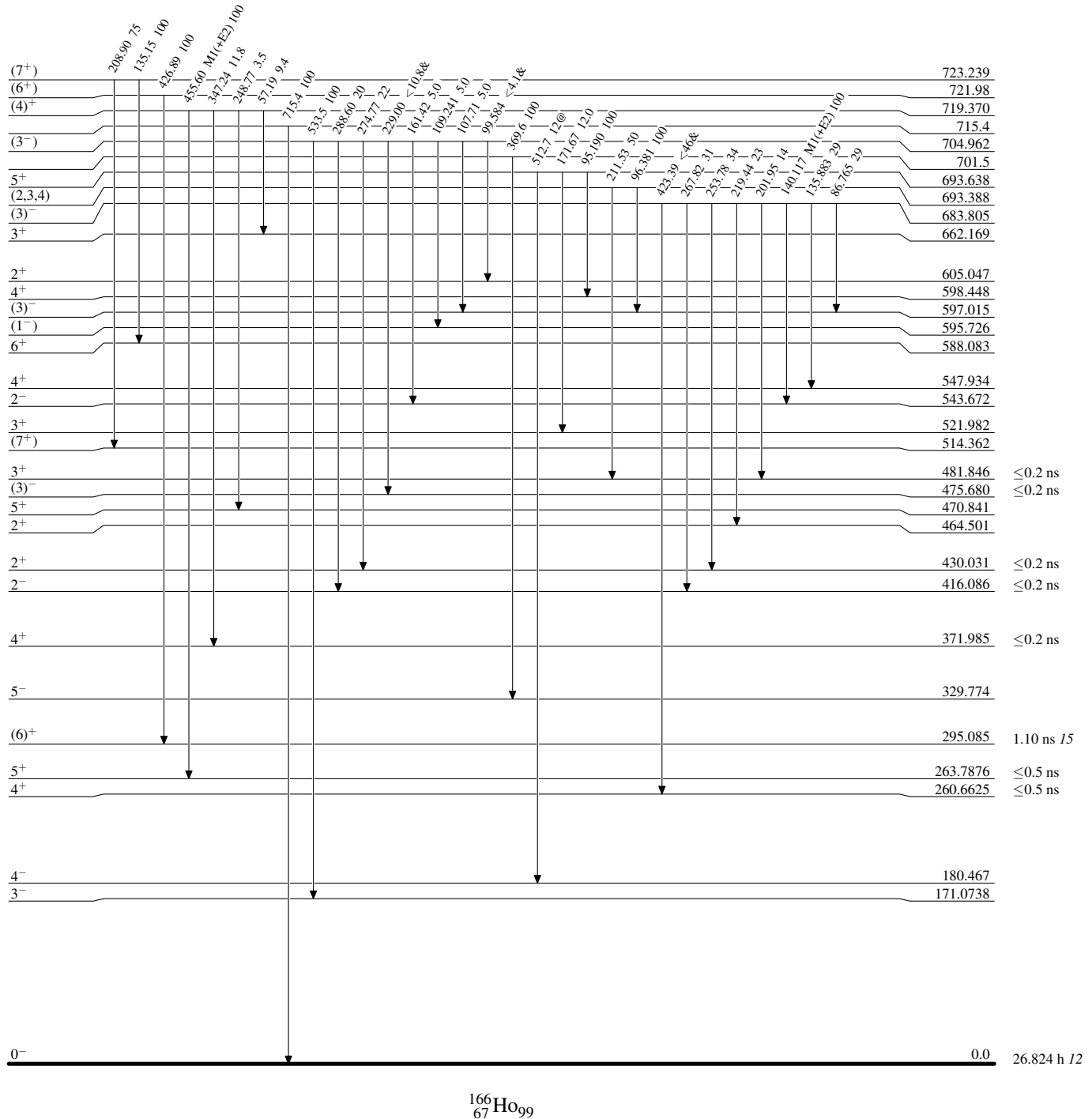
& Multiply placed: undivided intensity given

@ Multiply placed: intensity suitably divided



Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level
 & Multiply placed: undivided intensity given
 @ Multiply placed: intensity suitably divided

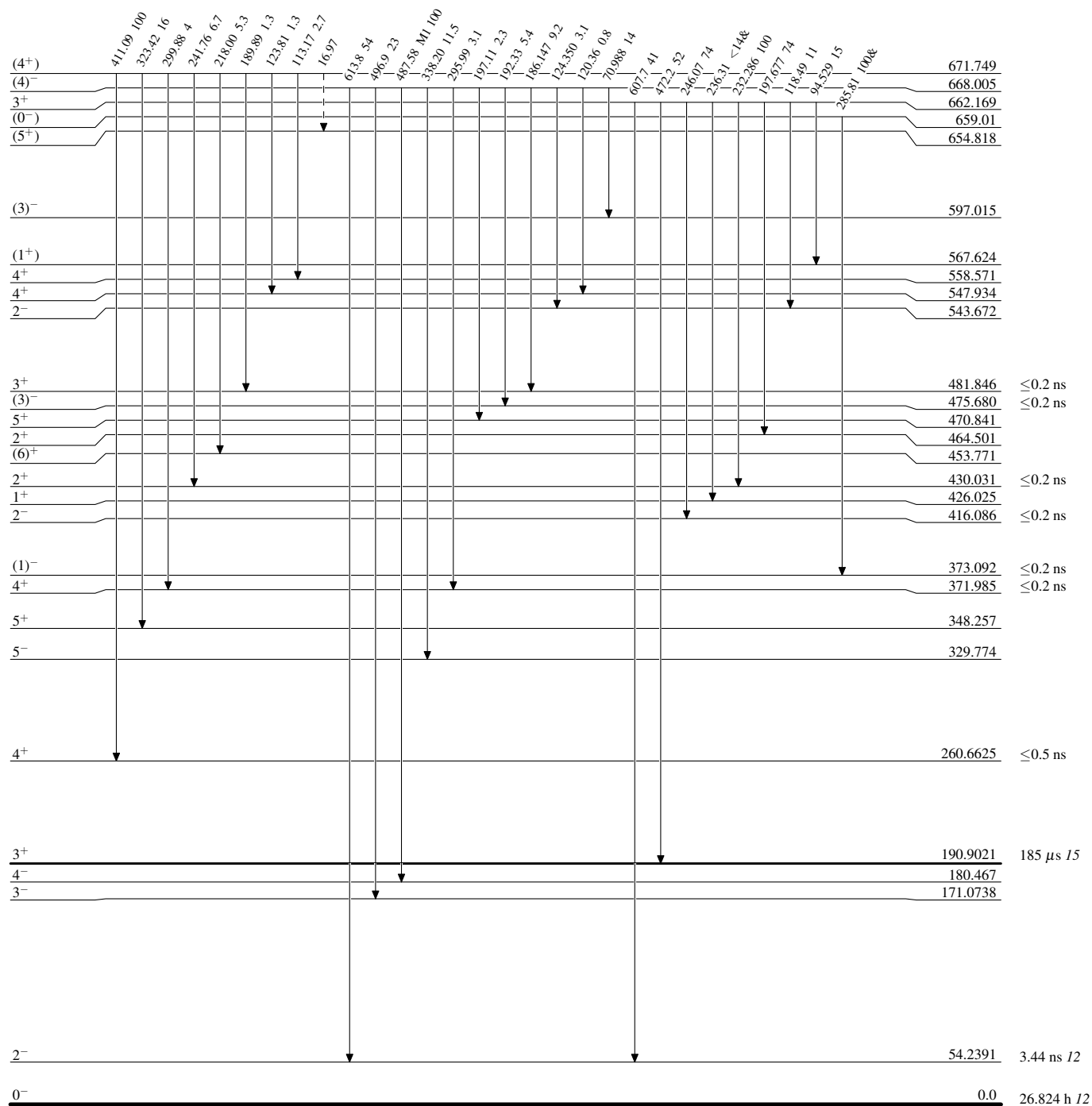


Adopted Levels, Gammas**Level Scheme (continued)****Legend**

Intensities: Relative photon branching from each level

& Multiply placed: undivided intensity given

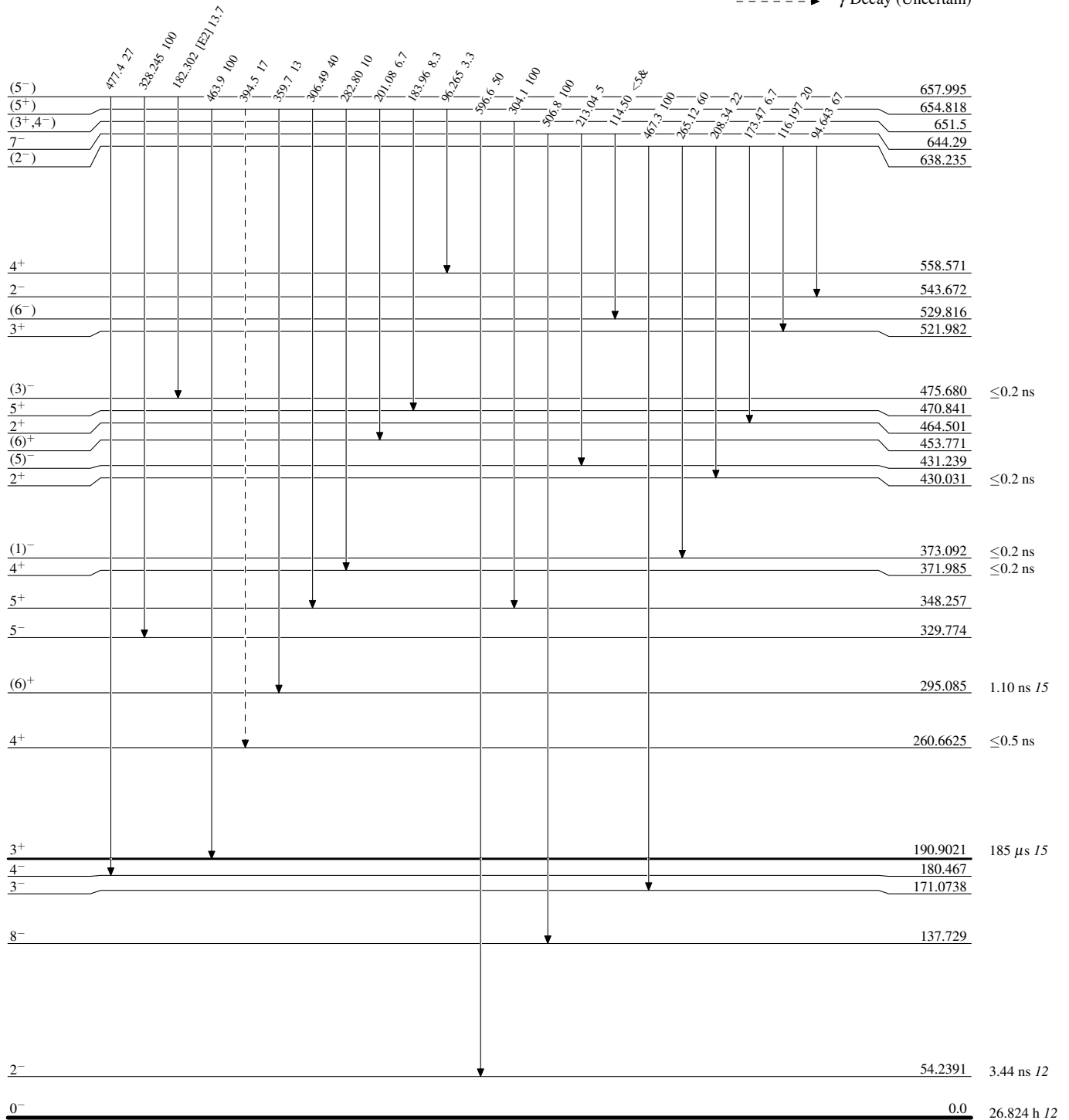
@ Multiply placed: intensity suitably divided

-----> γ Decay (Uncertain)

Adopted Levels, Gammas**Level Scheme (continued)**

Legend

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

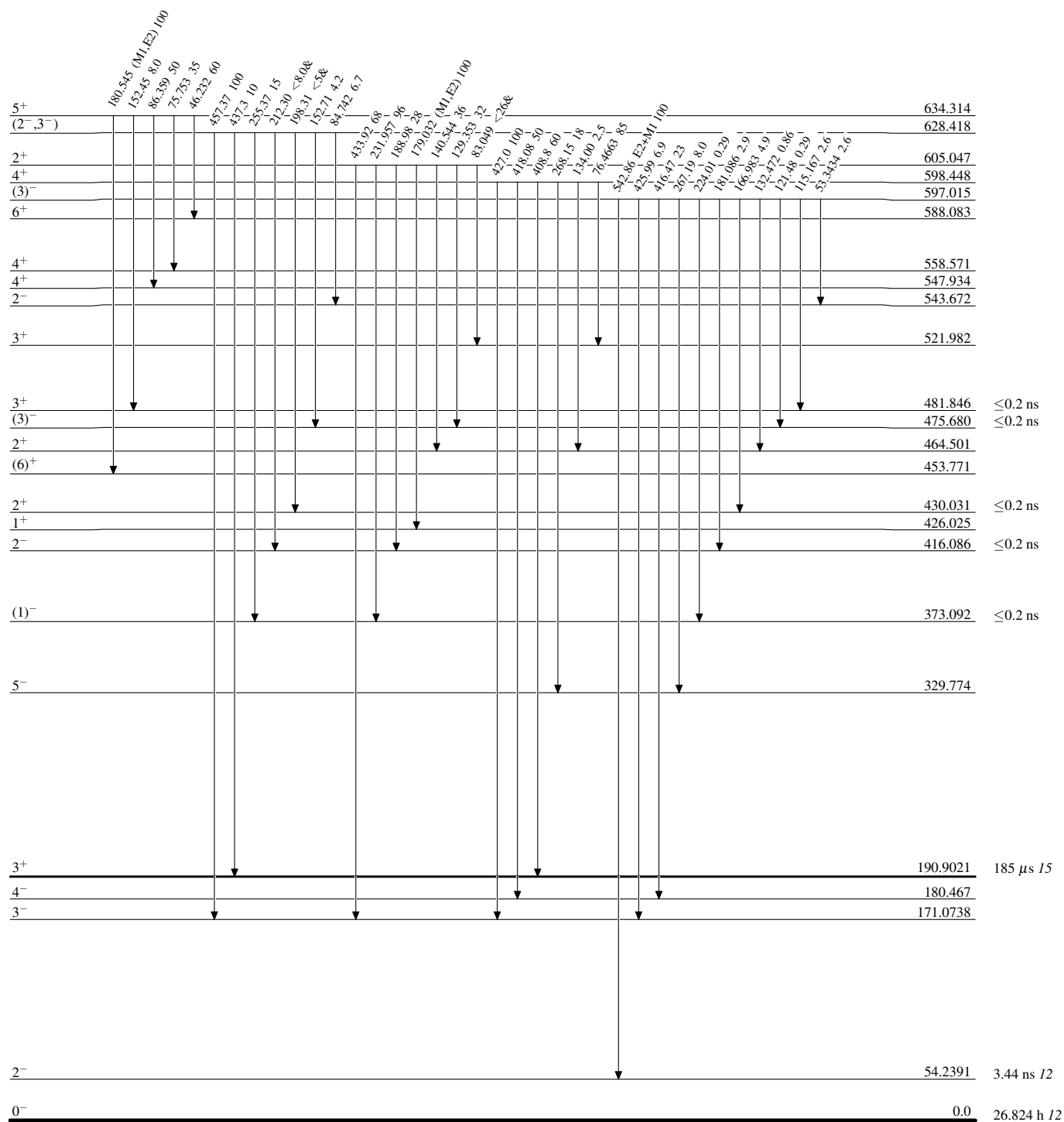
-----► γ Decay (Uncertain)

Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level

& Multiply placed: undivided intensity given

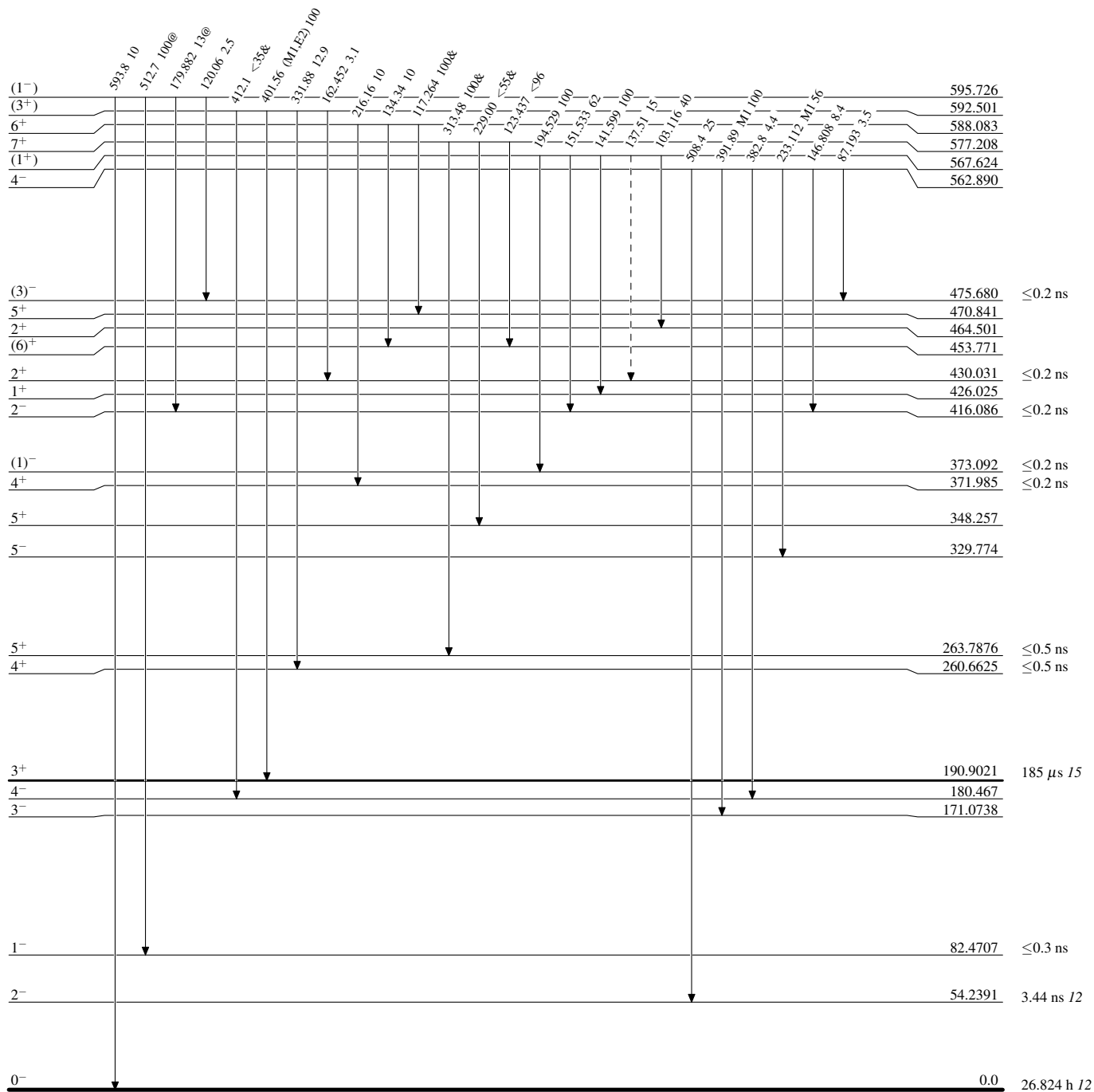
@ Multiply placed: intensity suitably divided



Adopted Levels, Gammas**Level Scheme (continued)**

Legend

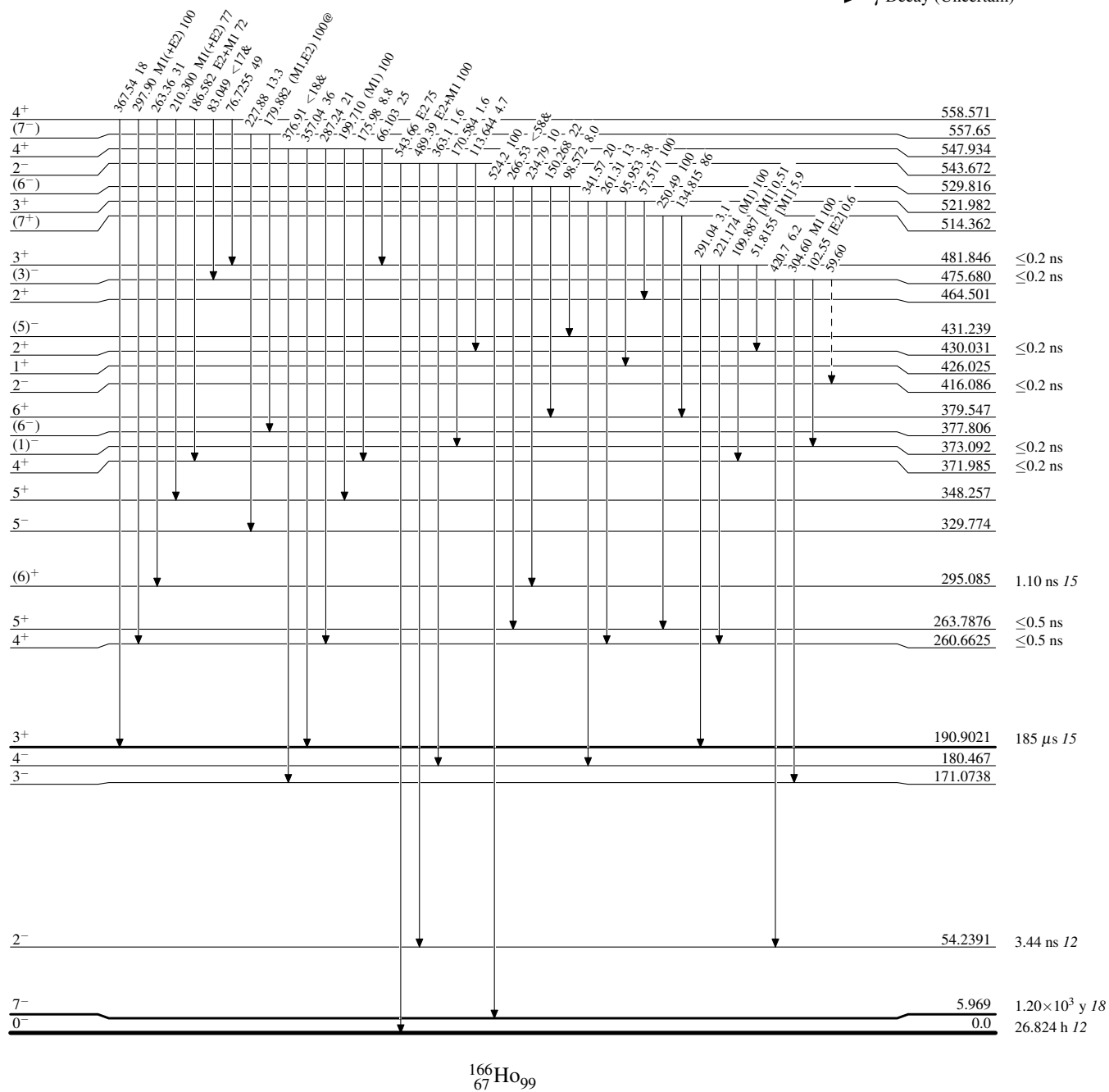
Intensities: Relative photon branching from each level
 & Multiply placed: undivided intensity given
 @ Multiply placed: intensity suitably divided

-----► γ Decay (Uncertain) $^{166}_{67}\text{Ho}_{99}$

Adopted Levels, Gammas**Level Scheme (continued)**

Legend

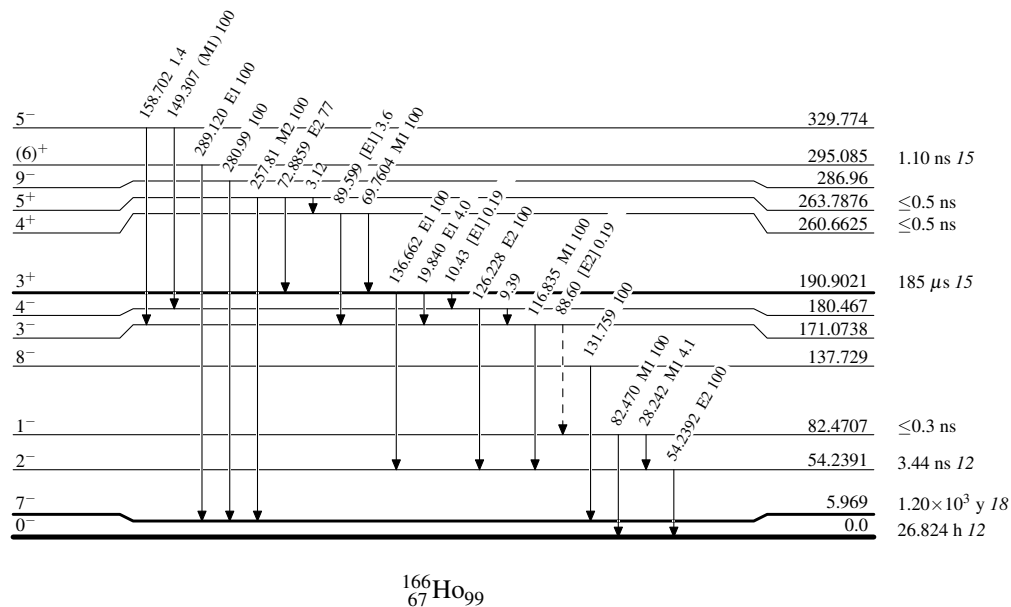
Intensities: Relative photon branching from each level
 & Multiply placed: undivided intensity given
 @ Multiply placed: intensity suitably divided

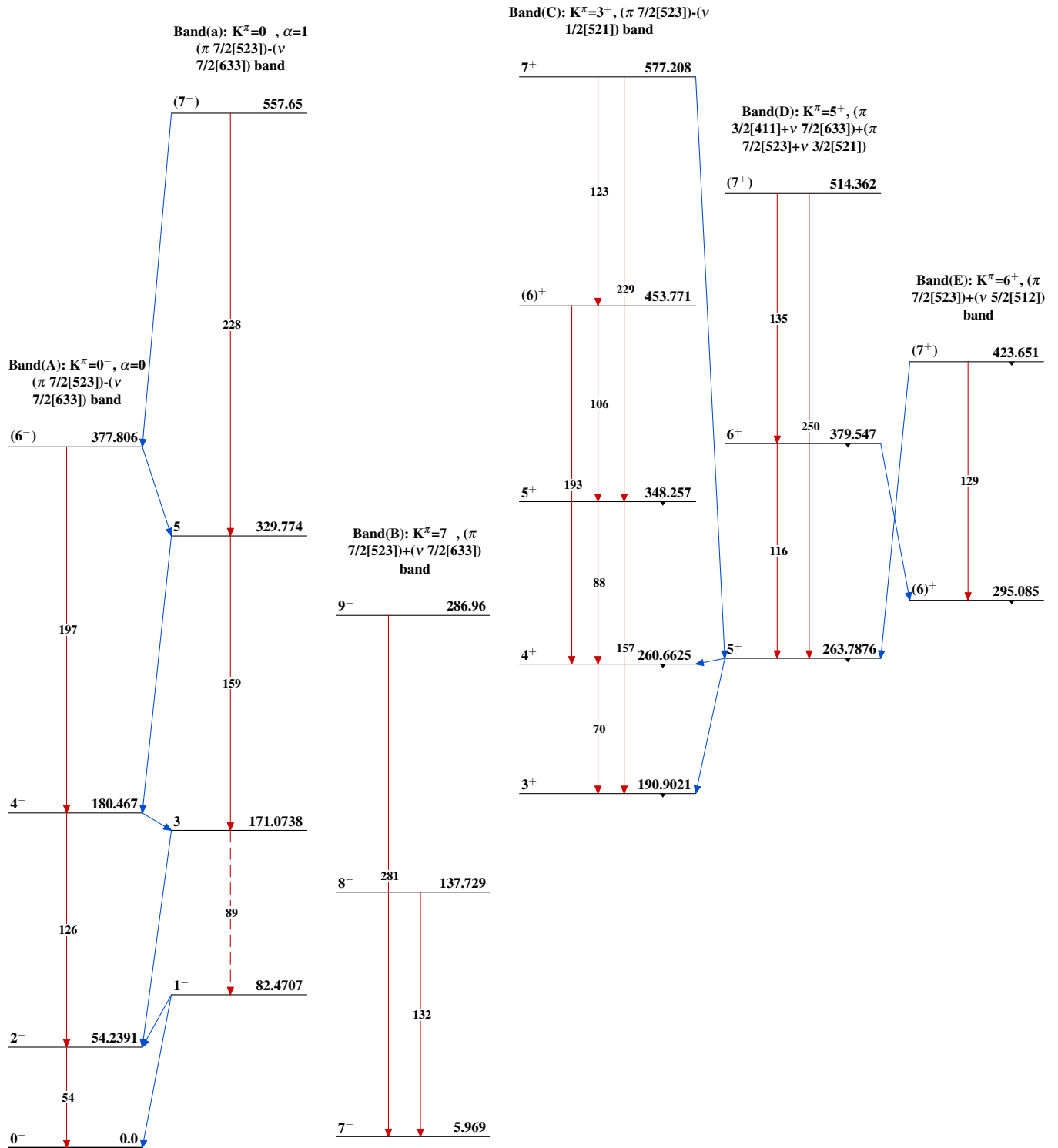
-----► γ Decay (Uncertain)

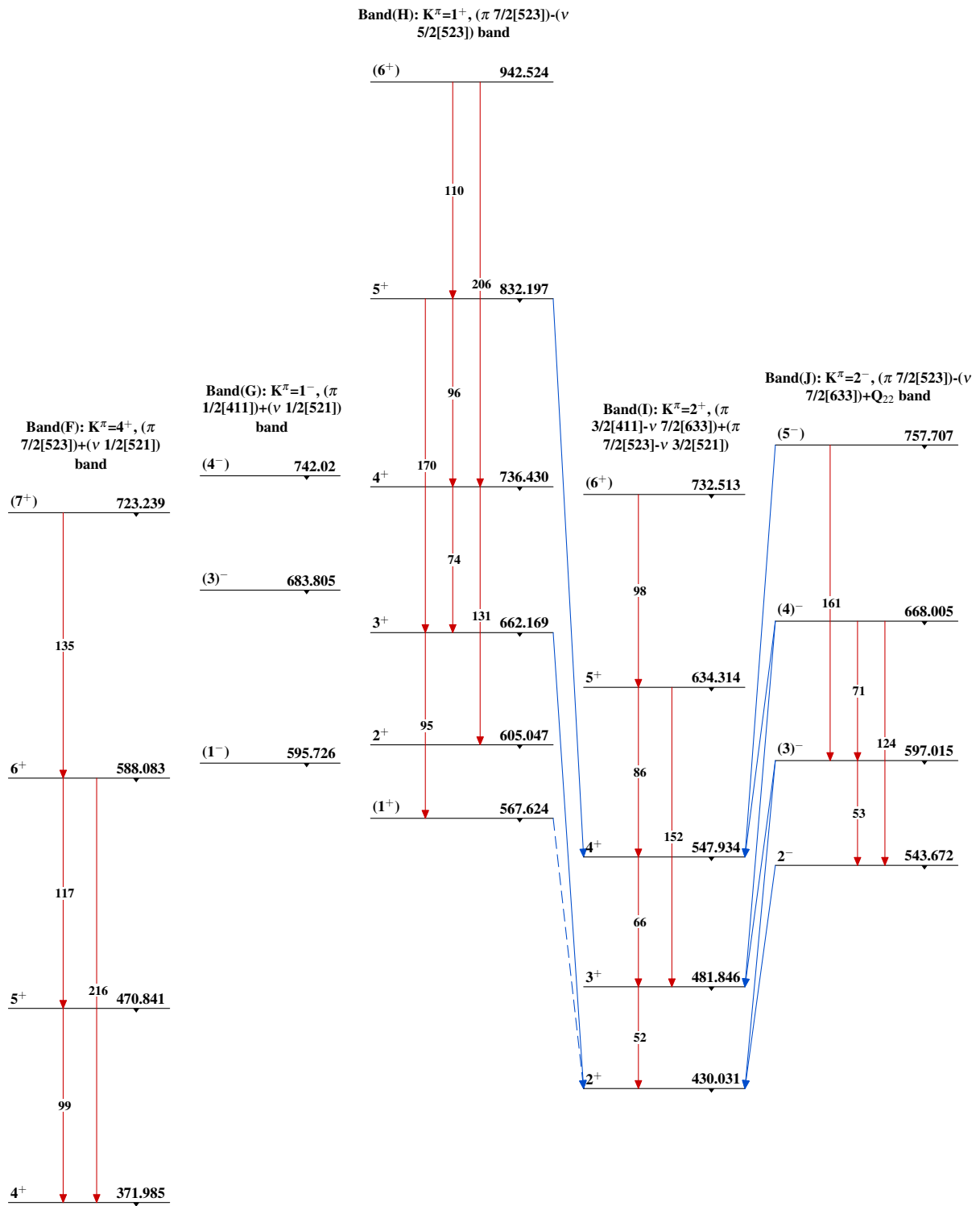
Adopted Levels, Gammas**Level Scheme (continued)**

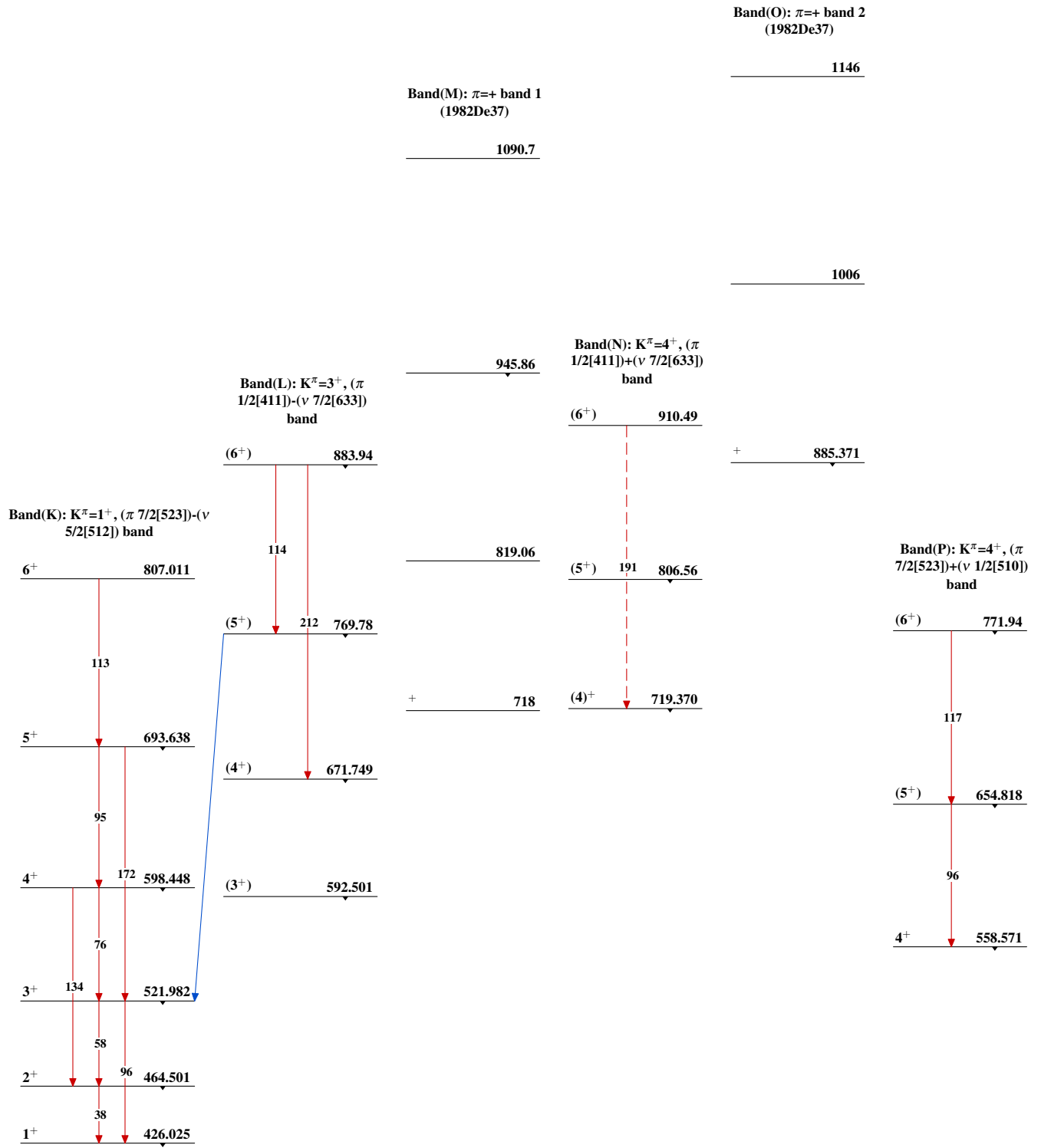
Legend

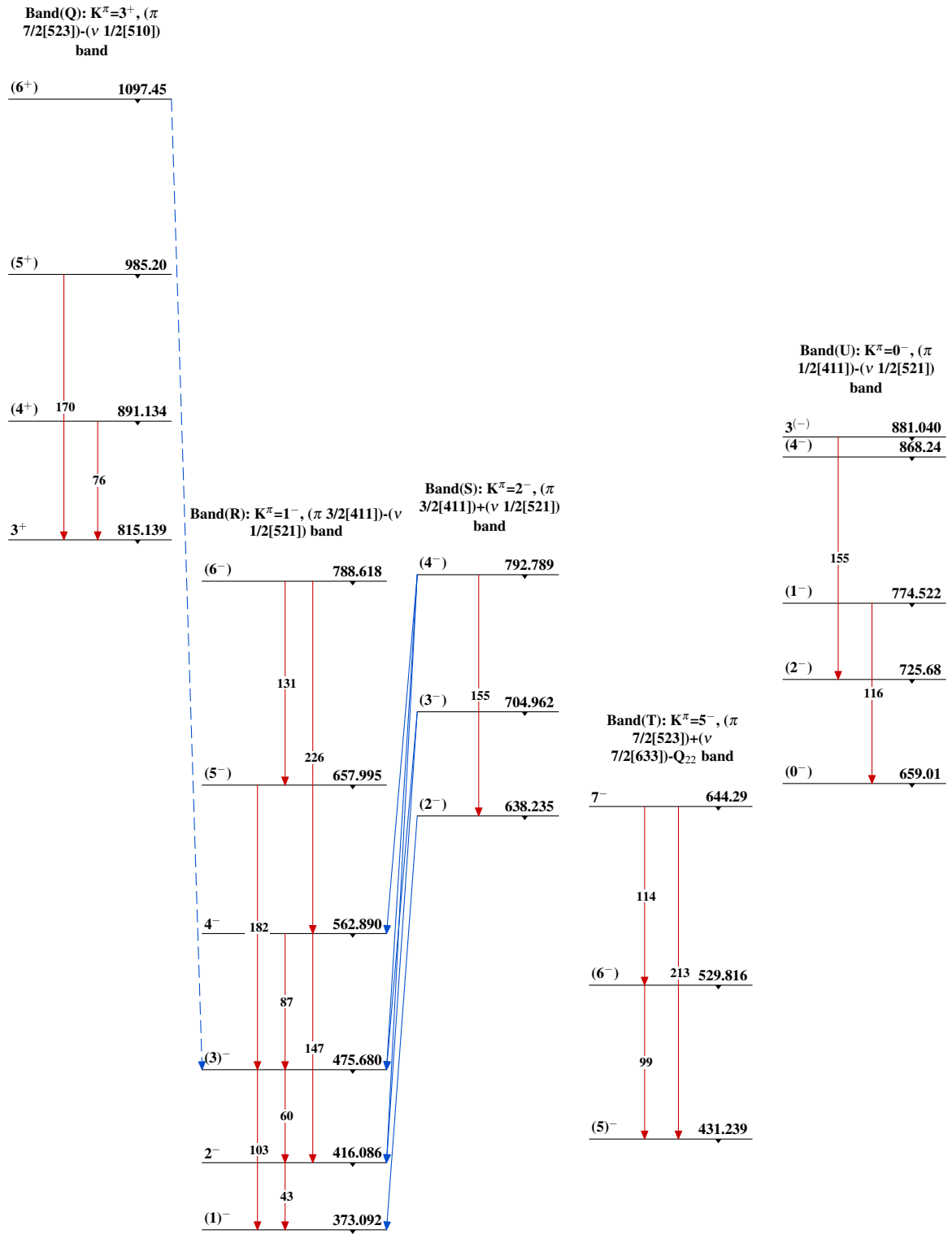
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

-----> γ Decay (Uncertain)

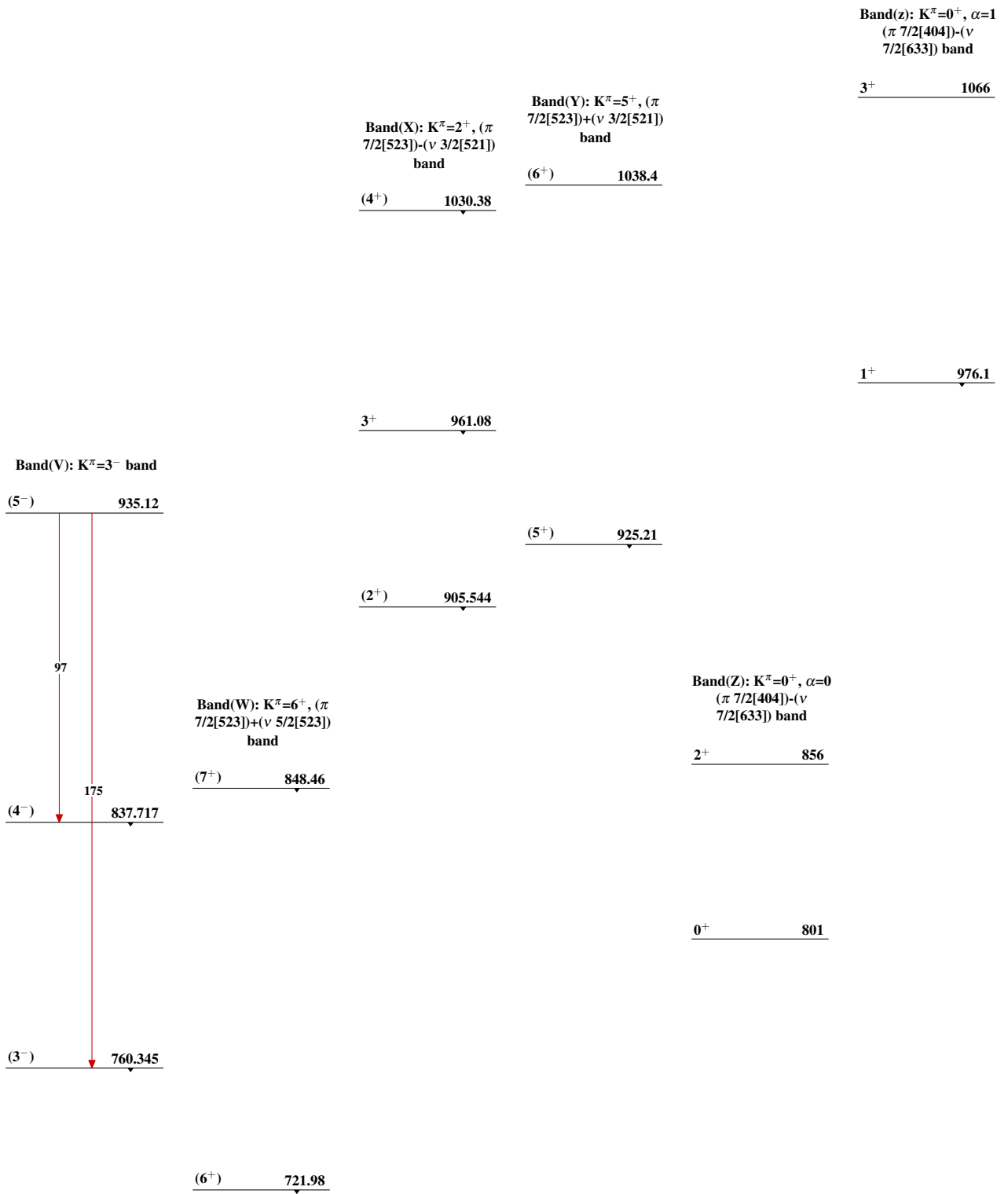
Adopted Levels, Gammas $^{166}_{67}\text{Ho}_{99}$

Adopted Levels, Gammas (continued)

Adopted Levels, Gammas (continued) $^{166}_{67}\text{Ho}_{99}$

Adopted Levels, Gammas (continued)

Adopted Levels, Gammas (continued)



Adopted Levels, Gammas (continued)

		Band(d): $K^\pi=6^-$, (π 5/2[532])+(ν 7/2[633]) band	
		(9 ⁻)	1998
		(8 ⁻)	1834
		(7 ⁻)	1692
		(6 ⁻)	1560
		Band(c): $K^\pi=6^+$, (π 5/2[413])+(ν 7/2[633]) band	
		(7 ⁺)	1415.80
		Band(b): $K^\pi=1^+$, (π 5/2[413])-(ν 7/2[633]) band	
		5 ⁺	1380.15
		4 ⁺	1304.81
		(6 ⁺)	1272.0
		3 ⁺	1240.70
		2 ⁺	1190.13
		1 ⁺	1146.7
		Band(a): $K^\pi=7^+$, (π 7/2[404])+(ν 7/2[633]) band	
		(7 ⁺)	915