Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	V. S. Shirley	NDS 75,377 (1995)	1-Oct-1993

Q(β^-)=−1.47×10^3 *3*; S(n)=8215.8 *23*; S(p)=4915.4 *17*; Q(α)=1968.1 *18* 2012Wa38
Note: Current evaluation has used the following Q record −1605 SY8216.0 234914.4 *171967.8 20* 1993Au05.

^{173}Lu Levels

See 1983Ha25 and 1983Ha49 for electric field gradients and quadrupole interaction frequencies for ^{173}Lu in Re; 1983Ha25 include extrapolated estimate of quadrupole moment.

Cross Reference (XREF) Flags

A ^{173}Hf ε decay
B ^{172}Yb(p,p) IAR
C ^{173}Yb(p,nγ), (d,2nγ)
D ^{174}Yb(p,2nγ)
E ^{172}Yb(^{3}He,d), (α,t)

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	XREF	Comments
0.0[@]	7/2$^+$	1.37 y *1*	A CDE	%ε=100 μ=2.34 *9* μ: nuclear orientation (1989Ra17) (relative to μ=+2.2327 for ^{175}Lu standard). J$^\pi$: L=4 in ^{172}Yb(^{3}He,d), (α,t); J=7/2 directly measured for other odd-mass Lu isotopes from 169-177; narrow range (2.0-2.5) of magnetic moments for all odd-mass Lu isotopes from 171-177 confirms similar structure. T$_{1/2}$: from 1962Bo12. Other values: 1.30 y *6* (1959Bi11), 1.32 y *8* (1960Gr15). Others: 1951Wi08, 1957Bo61, 1957Go78, 1960Wi06.
117.181[@] *13*	(9/2$^+$)		A CD	
123.672[&] *13*	5/2$^-$	74.2 μs *10*	A CDe	XREF: e(125). J$^\pi$: 5/2$^-$ for 123.7 level and 3/2$^-$ for 263.3 level are from: E1 γ (123.7 level−g.s.); M1+E2 γ (263.3 level-123.7 level); L=1 for 263.3-level peak in ^{172}Yb(^{3}He,d), (α,t). T$_{1/2}$: $\gamma\gamma$(t), γce(t) in ^{173}Hf ε decay (1969FaZY). Other values: 70 μs *15* (^{173}Hf ε decay (1962Va06)); 77 μs *5* (^{173}Hf ε decay (1964Pe08)); 70 μs *10* (^{173}Yb(p,nγ), (d,2nγ) (1965Bj01)); 87 μs *3* (^{173}Yb(p,nγ), (d,2nγ) (1967Co20,1967Co26)). Others: 1959Ha09, 1965Mc03, 1968Io01.
128.343[&] *15*	1/2$^-$	5.2 ns *5*	A CDe	XREF: e(125). J$^\pi$: L=3+1 for unresolved 123.7− and 128.3−level peaks in ^{172}Yb(^{3}He,d), (α,t); *J*$^\pi$ shown to be 5/2$^-$ for 123.7 level; odd-mass Lu isotopes from 167-177 have close lying 1/2$^-$ and 5/2$^-$ 1/2[541] states. T$_{1/2}$: from ^{173}Hf ε decay.
198.47[&] *7*	(9/2)$^-$		CDE	J$^\pi$: L=5 in ^{172}Yb(^{3}He,d), (α,t); 9/2$^-$ consistent with band assignment.
258.56[@] *7*	(11/2$^+$)		CD	
263.306[&] *15*	3/2$^-$	≤0.16 ns	A CDE	J$^\pi$: see comment with 123.7 level. T$_{1/2}$: from ^{173}Hf ε decay.
356.996[a] *15*	5/2$^+$	383 ps *19*	A CDE	J$^\pi$: L=2 in ^{172}Yb(^{3}He,d), (α,t); M1 γ to 7/2$^+$. T$_{1/2}$: from ^{173}Yb(p,nγ), (d,2nγ).
358.70[&] *10*	(13/2$^-$)		CD	
423.62[@] *9*	(13/2$^+$)		CD	
425.317[b] *16*	1/2$^+$	0.84 ns *20*	A CDe	XREF: e(432). J$^\pi$: L=0+2 for unresolved 425.3− and 434.9−level peaks in ^{172}Yb(^{3}He,d),

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Adopted Levels, Gammas (continued)

^{173}Lu Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	XREF	Comments
				(α,t); J^π shown to be $3/2^+$ for 434.9 level. $T_{1/2}$: $\gamma\gamma$(t) in ^{173}Yb(p,nγ), (d,2nγ) (1976Sc19). Other value: 0.82 ns *20* (^{173}Hf ε decay (1972Lo22)). Other: 1972An06.
428.10[&] *7*	($7/2^-$)		CD	
434.912[b] *15*	$3/2^+$	0.38 ns *10*	A CDe	XREF: e(432). Jπ: E1 γ to $5/2^-$, E1 γ to $1/2^-$. $T_{1/2}$: $\gamma\gamma$(t) in ^{173}Yb(p,nγ), (d,2nγ) (1976Sc19). Other value: 0.46 ns *20* (^{173}Hf ε decay (1972Lo22)).
448.98[c] *8*	($9/2^-$)	0.58 ns *12*	CD	$T_{1/2}$: from ^{173}Yb(p,nγ), (d,2nγ).
451.10[a] *8*	($7/2^+$)		CD	
552.093[b] *18*	$(5/2)^+$		A CDe	XREF: e(551). Jπ: M1+E2 γ from $3/2^+$; L=2 in ^{172}Yb(^{3}He,d), (α,t); $5/2^+$ consistent with band assignment.
570.80[a] *11*	($9/2^+$)		CD	
576.32[b] *9*	($7/2^+$)		CDe	XREF: e(551).
580.08[c] *10*	$(11/2)^-$		CDE	Jπ: L=5 in ^{172}Yb(^{3}He,d).
606.69[&] *13*	($17/2^-$)		CD	
611.40[@] *10*	($15/2^+$)		CD	
654.36[&] *10*	($11/2^-$)		CDE	
715.30[a] *13*	($11/2^+$)		CD	
721.54 *8*	($1/2^+$)		A E	Jπ: $1/2^+$ 1/2[660] state; $1/2^+$ consistent with γ to $1/2^-$ and Nilsson assignment.
734.64[c] *11*	($13/2^-$)		CDe	
734.71 *6*	($7/2^-$)		A e	Jπ: $7/2^-$ 7/2[523] state; $7/2^-$ consistent with γ to $7/2^+$ and Nilsson assignment.
777.90[b] *12*	($9/2^+$)		CD	
820.13[b] *11*	($11/2^+$)		CD	
820.97[@] *15*	($17/2^+$)		CD	
883.52[a] *18*	($13/2^+$)		CD	
889.225[d] *18*	$(3/2)^-$		A E	Jπ: M1 γ to $1/2^-$, probable M1 γ to $5/2^-$.
912.03[c] *13*	($15/2^-$)		CD	
941.69[&] *20*	($21/2^-$)		CD	
948.92[&] *13*	($15/2^-$)		CD	
957.77[d] *9*	($5/2^-$)		A E	Jπ: L=(3) in ^{172}Yb(^{3}He,d), (α,t); $5/2^-$ consistent with band assignment.
975.150 *17*	$3/2^+$		A	Jπ: $3/2^+$ 3/2[411] state; $3/2^+$ is from: M1 γ to $1/2^+$, M1 γ to $5/2^+$.
981.807[e] *17*	$1/2^+$		A	Jπ: E0+M1 γ to $1/2^+$.
1003.398[e] *16*	$3/2^+$		A	Jπ: E1 γ to $5/2^-$, E1 γ to $1/2^-$.
1047[#]			E	
1051.49[@] *13*	($19/2^+$)		C	
1074.71[a] *20*	($15/2^+$)		CD	
1092.45[b] *17*	($13/2^+$)		C	
1097.40 *5*	(1/2,3/2)		A	Jπ: γ to $1/2^-$; fed by $1/2^-$ ε parent.
1111.87[c] *16*	($17/2^-$)		CD	
1129.66 *3*	($1/2^-$,3/2)		A	Jπ: γ to $5/2^-$, γ to $1/2^-$; fed by $1/2^-$ ε parent.
1151[#d] *2*	$(9/2)^-$		E	Jπ: L=5 in ^{172}Yb(^{3}He,d), (α,t); $9/2^-$ consistent with band assignment.
1154.55[b] *17*	($15/2^+$)		C	
1162.432[f] *17*	$3/2^-$		A e	XREF: e(1166). Jπ: M1 γ to $5/2^-$, M1 γ to $1/2^-$.

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Adopted Levels, Gammas (continued)

^{173}Lu Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
1192.67[f] 6	(1/2⁻)	A e	XREF: e(1166). Jπ: γ to 1/2⁻; 1/2⁻ consistent with band assignment.
1246.520 22	1/2⁺	A	Jπ: (^{172}Yb 0⁺)(1/2⁺ 1/2[411]) state; 1/2⁺ is from E0+M1 γ to 1/2⁺.
1275[#f] 2	(7/2)⁻	E	Jπ: L=3 in ^{172}Yb(^{3}He,d), (α,t); 7/2⁻ consistent with band assignment.
1287.29[a] 24	(17/2⁺)	C	
1296[#] 2		E	
1302.08[@] 21	(21/2⁺)	C	
1316.24[&] 20	(19/2⁻)	C	
1332.87[c] 20	(19/2⁻)	CD	
1334.047 18	3/2⁻	A	Jπ: (^{172}Yb 2⁺)(3/2⁻ 1/2[541]) state; 3/2⁻ is from: M1 γ to 5/2⁻, M1 γ to 1/2⁻.
1359.26 4	(3/2⁺)	A	Jπ: 3/2⁺ (3/2[402]+3/2[651])? state; 3/2 is from: feeding by 1/2⁻ ε parent; γ′s to 1/2⁺, 1/2⁻, and 5/2⁻. 3/2⁺ consistent with Nilsson assignment.
1361.2[&] 4	(25/2⁻)	C	
1375[#]		E	
1408.75 8	(1/2⁺)	A E	Jπ: 1/2⁺ 1/2[400] state; (1/2⁺) is from L=(0) in ^{172}Yb(^{3}He,d), (α,t).
1475.2?[b] 2	(17/2⁺)	C	
1516[#]		E	
1520.9[a] 3	(19/2⁺)	C	
1573.89?[@] 24	(23/2⁺)	C	
1574.7[c] 3	(21/2⁻)	C	
1579.1? 6	(1/2⁺)	A	Jπ: (E0+M1) γ to 1/2⁺.
1714[#] 2		E	
1744[#] 2	(1/2⁺)	E	Jπ: L=(0) in ^{172}Yb(^{3}He,d), (α,t).
1768[#]		E	
1787[#]		E	
1836.9?[c] 4	(23/2⁻)	C	
1860[#] 2		E	
1940[#]		E	
1982[#]		E	
2024[#] 2		E	
2053[#]		E	
2092[#]		E	
2140[#]		E	
2218[#] 2		E	
2248[#]		E	
11664 15		B	E(level): from ^{172}Yb(p,p) IAR; E(level) in c.m. coordinates.

[†] From combined least-squares fit of levels and gammas in ^{173}Hf ε decay, ^{173}Yb(p,nγ), (d,2nγ), and ^{174}Yb(p,2nγ), except where noted.
[‡] From comparing ^{173}Lu structure, as determined from Iγ(d,2nγ)/Iγ(p,nγ) ratios and fits of γ-ray cascades into 5 interconnected rotational bands, with expectations based on Nilsson-model calculations, including rotation-particle coupling, except where noted.
[#] From ^{172}Yb(^{3}He,d), (α,t).
[@] Band(A): 7/2(404) band; α=13.1, β=−7.2 (J=7/2, 9/2, 11/2, 13/2 levels).
[&] Band(B): 1/2(541) band; α=9.5, a=3.9 (J=1/2, 3/2, 5/2, 9/2, 13/2 levels).
[a] Band(C): 5/2(402) band; α=13.6, β=−8.5 (J=5/2, 7/2, 9/2, 11/2 levels).
[b] Band(D): 1/2(411) band; α=13.1, a=−0.72 (J=1/2, 3/2, 5/2, 7/2, 9/2 levels).

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Adopted Levels, Gammas (continued)

^{173}Lu Levels (continued)

[c] Band(E): 9/2(514) band; α=12.0, β=−1.8 (J=9/2, 11/2, 13/2, 15/2 levels).
[d] Band(F): 3/2(532) band erratic spectroscopic factors in ^{172}Yb(^{3}He,d), (α,t) indicate breakdown of Nilsson model at high excitation energy in ^{173}Lu, due to Coriolis coupling between the high-lying states.
[e] Band(G): (^{172}Yb 1^{-})(1/2(541)) band.
[f] Band(H): 1/2(530) band see comment with 3/2[532] band.

Adopted Levels, Gammas (continued)

$\gamma(^{173}Lu)$

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	α[&]	$I_{(\gamma+ce)}$	Comments
117.181	$(9/2^+)$	117.181[a] *13*	100	0.0	$7/2^+$	[M1,E2]		2.1 *3*		
123.672	$5/2^-$	123.672 *13*	100	0.0	$7/2^+$	E1		0.202		B(E1)(W.u.)=1.29×10^{-9} *19*
128.343	$1/2^-$	4.670 *8*	100	123.672	$5/2^-$	E2		2.18×10^6		B(E2)(W.u.)=390 *40*
198.47	$(9/2)^-$	74.80 *7*	100	123.672	$5/2^-$	[E2]		11.0		
258.56	$(11/2^+)$	141.41[a] *9*		117.181	$(9/2^+)$					
		258.56 *7*		0.0	$7/2^+$					
263.306	$3/2^-$	134.964 *7*	37.3 *10*	128.343	$1/2^-$	M1+E2	1.7 *1*	1.23		B(M1)(W.u.)≥0.0015; B(E2)(W.u.)≥110
		139.634 *8*	100 *3*	123.672	$5/2^-$	M1+E2	0.41 *4*	1.38		B(M1)(W.u.)≥0.013; B(E2)(W.u.)≥43
356.996	$5/2^+$	239.828 *25*	1.2 *5*	117.181	$(9/2^+)$	[E2]		0.155		
		356.996 *15*	100 *4*	0.0	$7/2^+$	M1		0.110		B(M1)(W.u.)=0.00113 *9*
358.70	$(13/2^-)$	160.23 *8*	100	198.47	$(9/2)^-$	[E2]		0.598		
423.62	$(13/2^+)$	165.06 *7*	67[@] *13*	258.56	$(11/2^+)$	[M1,E2]		0.72 *18*		
		306.45 *9*	100[@] *20*	117.181	$(9/2^+)$	[E2]		0.072		
425.317	$1/2^+$	162.011 *9*	19.1[#] *5*	263.306	$3/2^-$	E1		0.099		B(E1)(W.u.)=9.5×10^{-6} *23*
		296.974 *9*	100[#] *2*	128.343	$1/2^-$	E1		0.0213		B(E1)(W.u.)=8.0×10^{-6} *20*
428.10	$(7/2^-)$	164.80 *7*	100 *16*	263.306	$3/2^-$					
		229.64 *7*	84 *11*	198.47	$(9/2)^-$					
		304.43 *7*	82 *11*	123.672	$5/2^-$					
434.912	$3/2^+$	9.595 *9*		425.317	$1/2^+$				36 *5*	
		77.916 *15*	0.489[#] *15*	356.996	$5/2^+$	M1+E2	≈3.6	9.0 *2*		B(M1)(W.u.)≈2.0×10^{-5}; B(E2)(W.u.)≈20 α: assuming 50% uncertainty in δ value.
		171.606 *8*	1.58[#] *8*	263.306	$3/2^-$	E1		0.086		B(E1)(W.u.)=8.7×10^{-7} *23*
		306.569 *8*	59.8[#] *13*	128.343	$1/2^-$	E1		0.0197		B(E1)(W.u.)=5.8×10^{-6} *15*
		311.239 *8*	100.0[#] *19*	123.672	$5/2^-$	E1		0.0190		B(E1)(W.u.)=9.2×10^{-6} *24*
448.98	$(9/2^-)$	190.42 *9*	9.1[@] *18*	258.56	$(11/2^+)$	[E1]		0.0651		B(E1)(W.u.)=3.1×10^{-6} *10*
		331.81[a] *8*	47[@] *9*	117.181	$(9/2^+)$	[E1]		0.0162		B(E1)(W.u.)=3.1×10^{-6} *10*
		448.98 *8*	100[@] *20*	0.0	$7/2^+$					
451.10	$(7/2^+)$	94.10 *8*	100 *21*	356.996	$5/2^+$					
		451.10 *8*	63 *13*	0.0	$7/2^+$					
552.093	$(5/2)^+$	117.181[a] *13*	100[#] *20*	434.912	$3/2^+$					
		126.776 *14*	4.3[@] *9*	425.317	$1/2^+$					
		288.786 *13*	45[#] *3*	263.306	$3/2^-$	[E1]		0.0226		
		428.420 *13*	19.5[#] *25*	123.672	$5/2^-$					
570.80	$(9/2^+)$	119.70 *8*	100 *19*	451.10	$(7/2^+)$					
		213.80 *11*	15 *3*	356.996	$5/2^+$					
576.32	$(7/2^+)$	141.41[a] *9*	<233	434.912	$3/2^+$					

$^{173}_{71}Lu_{102}$-5

Adopted Levels, Gammas (continued)

$\gamma(^{173}Lu)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[&]
576.32	$(7/2^+)$	377.85 *10*	44 *9*	198.47	$(9/2)^-$	[E1]	0.0118
		452.65 *9*	100 *12*	123.672	$5/2^-$		
580.08	$(11/2)^-$	131.10 *8*	100 *20*	448.98	$(9/2^-)$		
		462.91[a] *10*	20 *4*	117.181	$(9/2^+)$		
606.69	$(17/2^-)$	248.00 *8*	100	358.70	$(13/2^-)$		
611.40	$(15/2^+)$	187.78 *7*	31 *4*	423.62	$(13/2^+)$		
		352.84 *8*	100 *12*	258.56	$(11/2^+)$		
654.36	$(11/2^-)$	226.26 *10*	35 *5*	428.10	$(7/2^-)$		
		295.67 *9*	69 *9*	358.70	$(13/2^-)$		
		455.89 *8*	100 *21*	198.47	$(9/2)^-$		
715.30	$(11/2^+)$	144.51 *8*	100 *12*	570.80	$(9/2^+)$		
		264.20 *11*	31 *4*	451.10	$(7/2^+)$		
721.54	$(1/2^+)$	458.23 *8*	51 *25*	263.306	$3/2^-$		
		593.20 *8*	100 *25*	128.343	$1/2^-$		
734.64	$(13/2^-)$	154.56 *8*	100 *12*	580.08	$(11/2)^-$		
		285.66 *9*	26 *4*	448.98	$(9/2^-)$		
		476.08 *11*	5.8 *13*	258.56	$(11/2^+)$		
734.71	$(7/2^-)$	377.71 *6*	≈16	356.996	$5/2^+$		
		734.71 *6*	100 *16*	0.0	$7/2^+$		
777.90	$(9/2^+)$	201.58 *12*	100 *20*	576.32	$(7/2^+)$		
		225.81 *12*	43 *9*	552.093	$(5/2)^+$		
		349.80 *12*	48 *10*	428.10	$(7/2^-)$		
820.13	$(11/2^+)$	243.80 *13*	85 *17*	576.32	$(7/2^+)$		
		396.51 *14*	29 *5*	423.62	$(13/2^+)$		
		461.43 *11*	80 *16*	358.70	$(13/2^-)$		
		621.66 *9*	100 *20*	198.47	$(9/2)^-$		
820.97	$(17/2^+)$	209.57 *13*	25 *5*	611.40	$(15/2^+)$		
		397.35 *13*	100 *18*	423.62	$(13/2^+)$		
883.52	$(13/2^+)$	168.22 *13*	100 *20*	715.30	$(11/2^+)$		
		312.73 *15*	62 *13*	570.80	$(9/2^+)$		
889.225	$(3/2)^-$	625.918 *13*	44.6 *19*	263.306	$3/2^-$	M1	0.0258
		760.881 *13*	100 *4*	128.343	$1/2^-$	M1	0.0158
		765.551 *13*	22.3 *11*	123.672	$5/2^-$	(M1)	0.0155
912.03	$(15/2^-)$	177.40 *8*	100[@] *20*	734.64	$(13/2^-)$		
		331.81[a] *8*	42[@] *8*	580.08	$(11/2)^-$		
941.69	$(21/2^-)$	335.00 *15*	100	606.69	$(17/2^-)$		
948.92	$(15/2^-)$	294.55 *12*	32 *6*	654.36	$(11/2^-)$		
		342.22 *10*	34 *7*	606.69	$(17/2^-)$		
		590.22 *9*	100 *21*	358.70	$(13/2^-)$		
957.77	$(5/2^-)$	694.426[a] *9*		263.306	$3/2^-$		
		834.10[a] *9*		123.672	$5/2^-$		

Adopted Levels, Gammas (continued)

γ(^{173}Lu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#]	α[&]
975.150	3/2$^+$	423.057 *15*	14.4 *6*	552.093	(5/2)$^+$	M1		0.0704
		540.238 *11*	84.4 *23*	434.912	3/2$^+$	M1		0.0375
		549.832 *12*	100 *3*	425.317	1/2$^+$	M1		0.0359
		618.153 *17*	5.5 *3*	356.996	5/2$^+$	(M1)		0.0266
981.807	1/2$^+$	429.714 *15*	2.8 *6*	552.093	(5/2)$^+$			
		546.894 *12*	9.5 *4*	434.912	3/2$^+$	M1		0.0364
		556.489 *12*	5.4 *8*	425.317	1/2$^+$	E0+M1		
		718.499 *11*	91 *3*	263.306	3/2$^-$	E1		
		853.462 *11*	100 *4*	128.343	1/2$^-$	E1		
1003.398	3/2$^+$	451.305 *14*	2.3 *3*	552.093	(5/2)$^+$	M1+E2	1.4 *+82−7*	0.036 *12*
		568.485 *10*	3.1 *4*	434.912	3/2$^+$	E0+(M1+E2)		
		578.080 *11*	6.1 *3*	425.317	1/2$^+$	M1		0.0316
		740.09 *1*	6.0 *7*	263.306	3/2$^-$			
		875.054 *10*	59.1 *22*	128.343	1/2$^-$	E1		
		879.724 *11*	100 *4*	123.672	5/2$^-$	E1		
1051.49	(19/2$^+$)	230.53 *14*	14 *3*	820.97	(17/2$^+$)			
		440.10 *9*	100 *20*	611.40	(15/2$^+$)			
1074.71	(15/2$^+$)	191.18 *15*	100 *20*	883.52	(13/2$^+$)			
		359.40 *15*	60 *12*	715.30	(11/2$^+$)			
1092.45	(13/2$^+$)	≈272[b]	≈67	820.13	(11/2$^+$)			
		314.54 *18*	100 *20*	777.90	(9/2$^+$)			
		438.08 *15*	30 *7*	654.36	(11/2$^-$)			
1097.40	(1/2,3/2)	834.10[a] *9*		263.306	3/2$^-$			
		969.05 *4*		128.343	1/2$^-$			
1111.87	(17/2$^-$)	199.83 *9*	100 *20*	912.03	(15/2$^-$)			
		377.23 *12*	59 *12*	734.64	(13/2$^-$)			
1129.66	(1/2$^-$,3/2)	866.348 *23*	4 *2*	263.306	3/2$^-$			
		1001.311 *23*	55 *6*	128.343	1/2$^-$			
		1005.981 *23*	100 *7*	123.672	5/2$^-$			
1154.55	(15/2$^+$)	334.42 *17*	47 *9*	820.13	(11/2$^+$)			
		795.85 *15*	100 *20*	358.70	(13/2$^-$)			
1162.432	3/2$^-$	899.124[a] *11*	100 *4*	263.306	3/2$^-$	M1		0.0104
		1034.087 *11*	42.6 *17*	128.343	1/2$^-$	M1		
		1038.757 *12*	32.7 *13*	123.672	5/2$^-$	M1		
1192.67	(1/2$^-$)	929.36 *6*	100 *11*	263.306	3/2$^-$			
		1064.32 *6*	100 *15*	128.343	1/2$^-$			
1246.520	1/2$^+$	694.426[a] *9*	<50	552.093	(5/2)$^+$			
		811.606 *18*	66 *6*	434.912	3/2$^+$			
		821.201 *19*	17 *3*	425.317	1/2$^+$	E0+M1		
		889.522 *22*	14 *3*	356.996	5/2$^+$			
		983.211 *18*	16 *3*	263.306	3/2$^-$			

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Adopted Levels, Gammas (continued)

γ(^{173}Lu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[&]
1246.520	1/2+	1118.174 *18*	100 *7*	128.343	1/2−		
1287.29	(17/2+)	212.58 *19*	100 *21*	1074.71	(15/2+)		
		403.77 *17*	90 *17*	883.52	(13/2+)		
1302.08	(21/2+)	250.58 *19*	7.4 *15*	1051.49	(19/2+)		
		481.11 *17*	100 *20*	820.97	(17/2+)		
1316.24	(19/2−)	367.33 *18*	100 *20*	948.92	(15/2−)		
		374.55 *16*	≈67	941.69	(21/2−)		
		709.55 *15*	90 *17*	606.69	(17/2−)		
1332.87	(19/2−)	221.00 *14*	100 *19*	1111.87	(17/2−)		
		420.83 *15*	84 *16*	912.03	(15/2−)		
1334.047	3/2−	444.821 *16*	1.4 *4*	889.225	(3/2)−	M1	0.0617
		781.952 *16*	1.39 *25*	552.093	(5/2)+		
		899.124[a] *11*	3.6 *8*	434.912	3/2+		
		977.048 *18*	3.3 *4*	356.996	5/2+		
		1070.737 *13*	26.5 *11*	263.306	3/2−	M1	
		1205.700 *13*	100 *4*	128.343	1/2−	M1	
		1210.370 *13*	29.8 *11*	123.672	5/2−	M1	
1359.26	(3/2+)	229.61 *5*	100 *33*	1129.66	(1/2−,3/2)		
		807.17 *4*	50 *23*	552.093	(5/2)+		
		933.94 *4*	50 *23*	425.317	1/2+		
		1095.95 *4*	50 *23*	263.306	3/2−		
		1230.92 *4*	30 *7*	128.343	1/2−		
		1235.59 *4*	7 *3*	123.672	5/2−		
1361.2	(25/2−)	419.5 *3*	100	941.69	(21/2−)		
1408.75	(1/2+)	426.94 *8*	100 *17*	981.807	1/2+		
		1145.43 *8*	1.7 *8*	263.306	3/2−		
		1280.40 *8*	1.7 *8*	128.343	1/2−		
1475.2?	(17/2+)	320.65 *17*	100 *20*	1154.55	(15/2+)		
		382.75 *17*	67 *13*	1092.45	(13/2+)		
1520.9	(19/2+)	≈234	49 *10*	1287.29	(17/2+)		
		446.20 *20*	100 *20*	1074.71	(15/2+)		
1573.89?	(23/2+)	522.4 *2*	100	1051.49	(19/2+)		
1574.7	(21/2−)	241.85 *22*	23 *5*	1332.87	(19/2−)		
		462.91[a] *10*	100 *20*	1111.87	(17/2−)		
1579.1?	(1/2+)	596[b] *1*	<286	981.807	1/2+	(E0+M1)	
		1316.0[b] *3*	100 *29*	263.306	3/2−		
		1450[b] *1*	≈71	128.343	1/2−		
1836.9?	(23/2−)	262.2 *3*	100	1574.7	(21/2−)		

$^{173}_{71}Lu_{102}$-8

Adopted Levels, Gammas (continued)

$\gamma(^{173}Lu)$ (continued)

† From combined fit of levels and gammas in ^{173}Hf ε decay, ^{173}Yb(p,nγ), (d,2nγ), and ^{174}Yb(p,2nγ), except where noted.

‡ Relative photon branching from each level (values deduced from combined analysis of branchings in ^{173}Hf ε decay, ^{173}Yb(p,nγ), (d,2nγ), and ^{174}Yb(p,2nγ), except where noted). Upper limits are given for photon branchings affected by multiple placement.

From ^{173}Hf ε decay.

@ From ^{173}Yb(p,nγ), (d,2nγ).

& 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.

b Placement of transition in the level scheme is uncertain.

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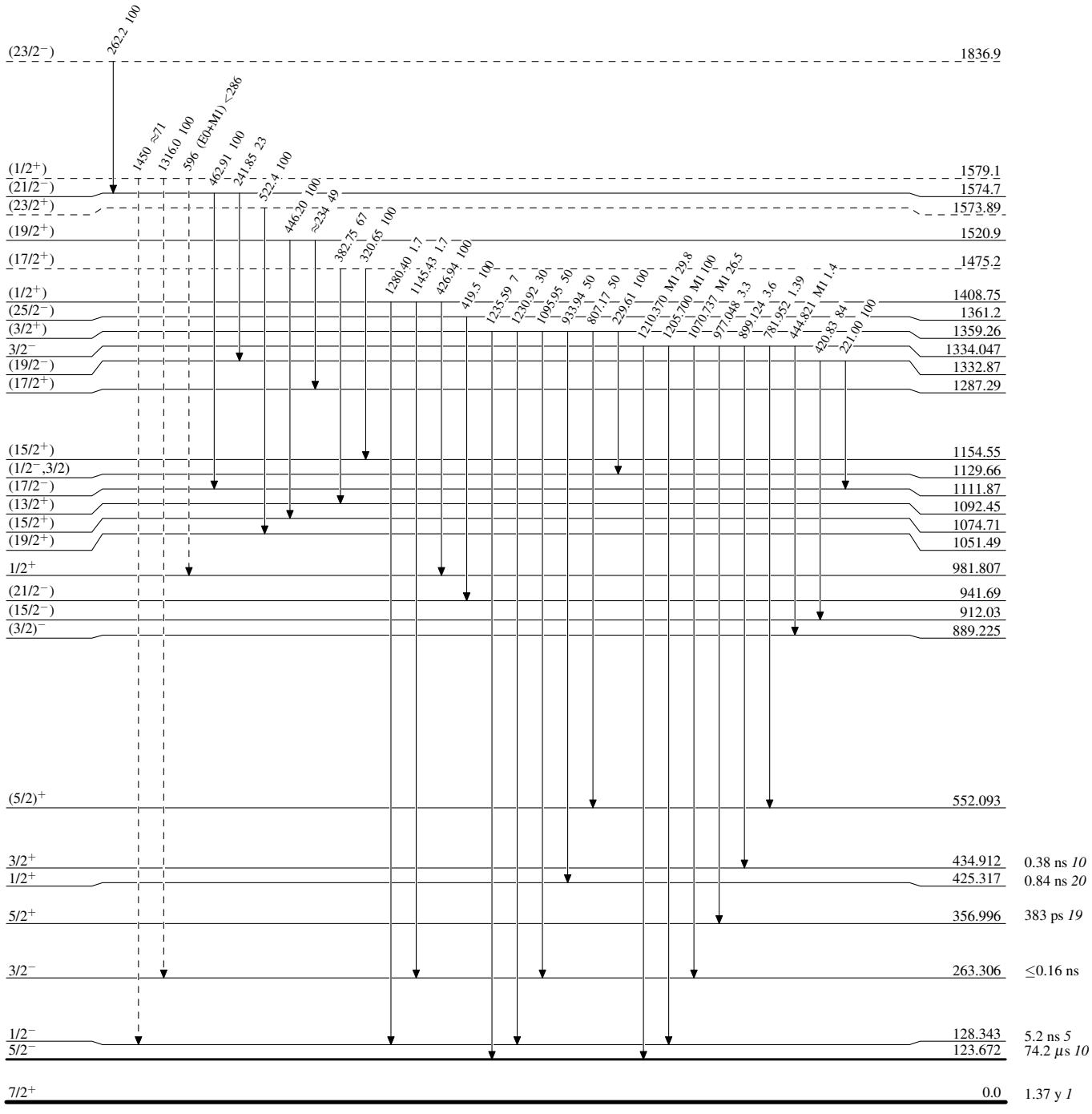
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



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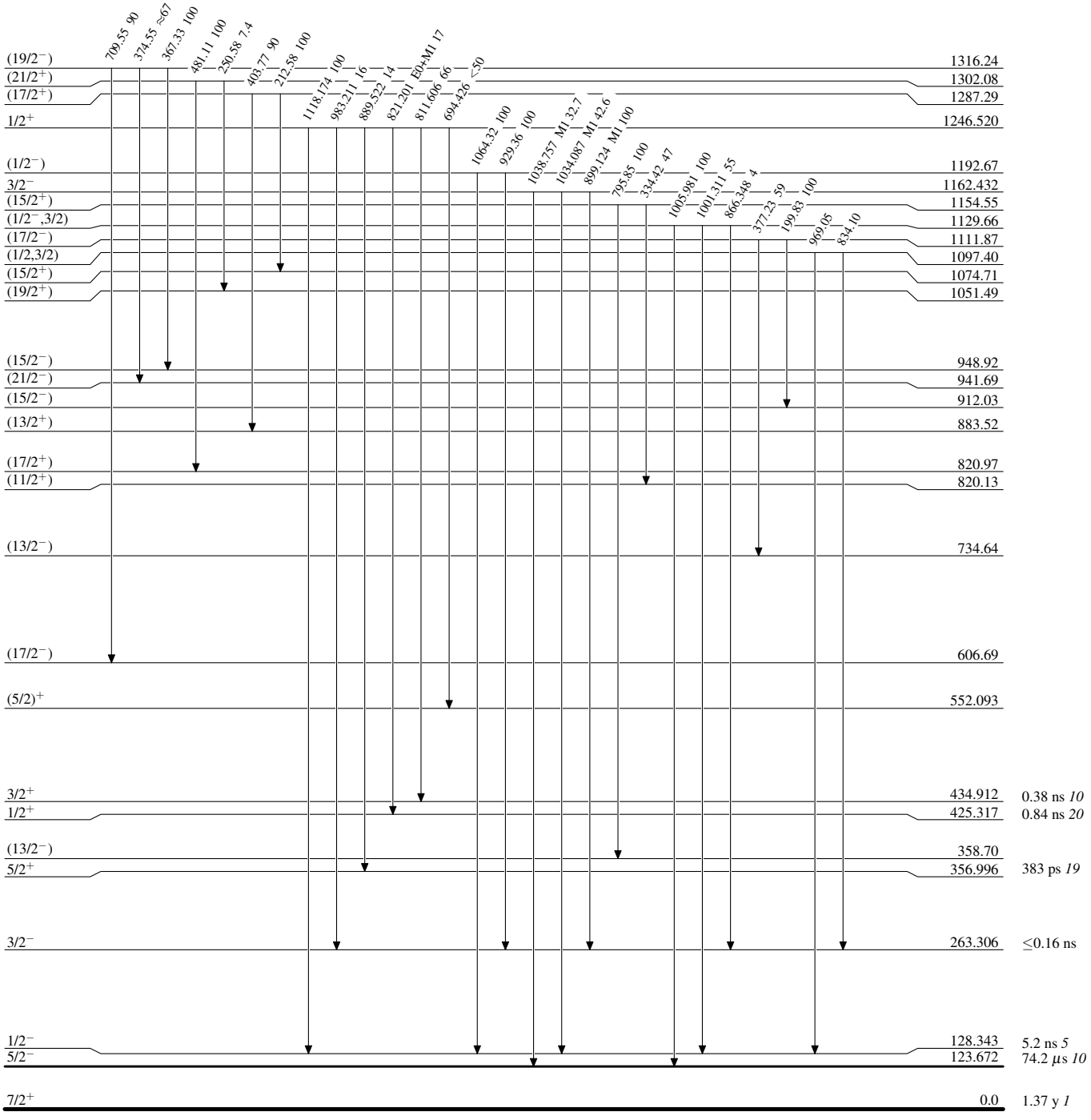
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



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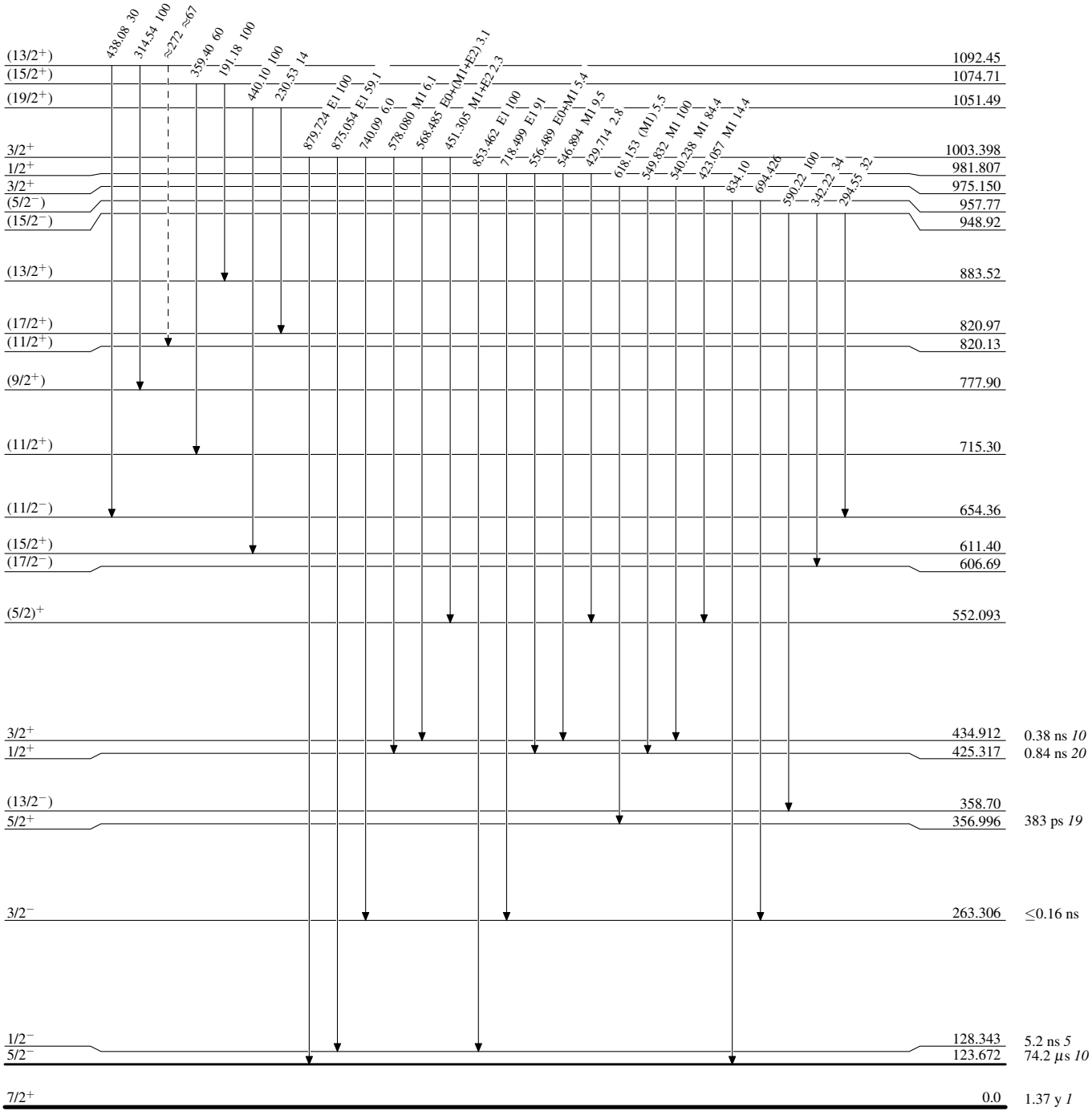
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)

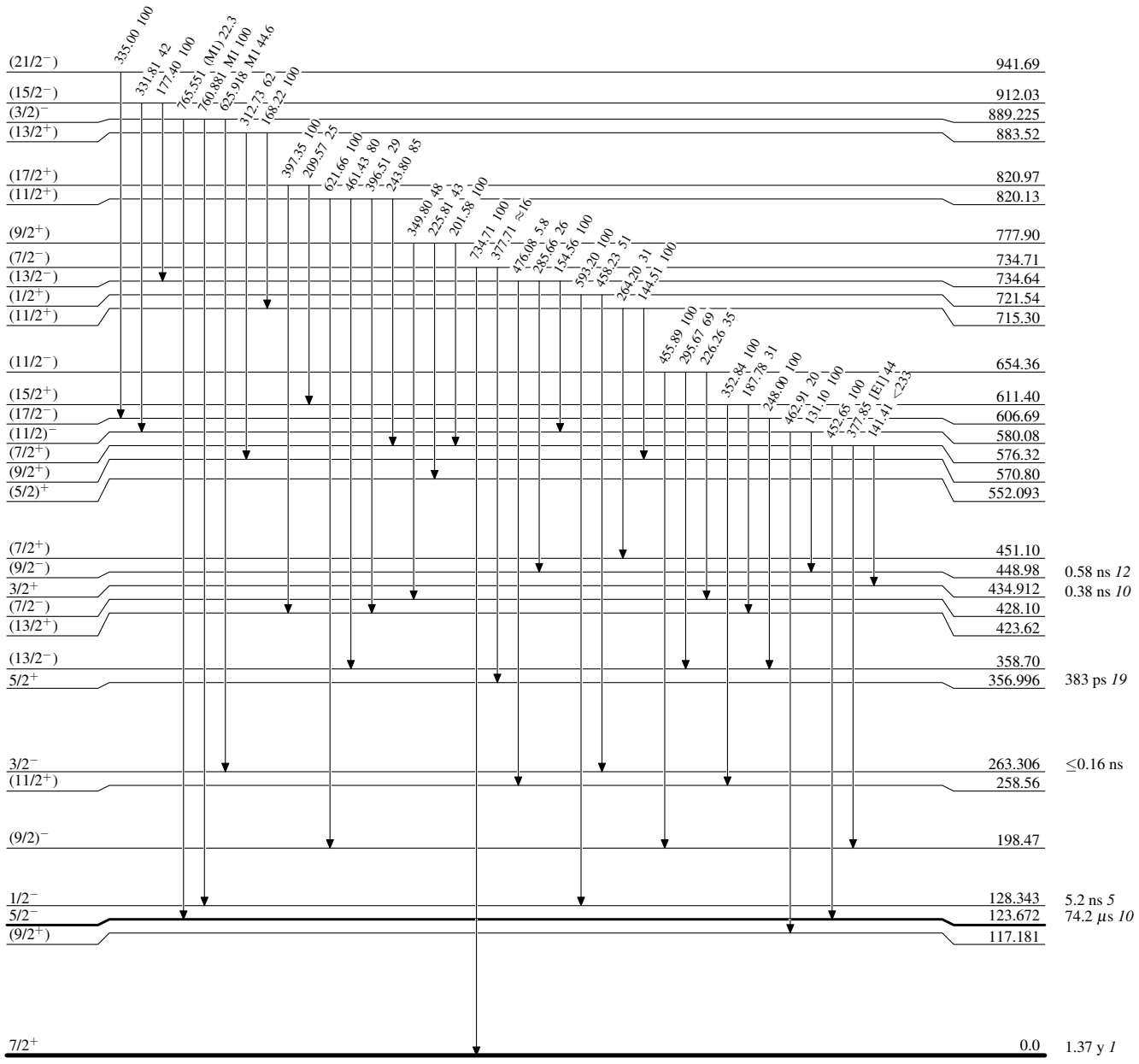


$^{173}_{71}Lu_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

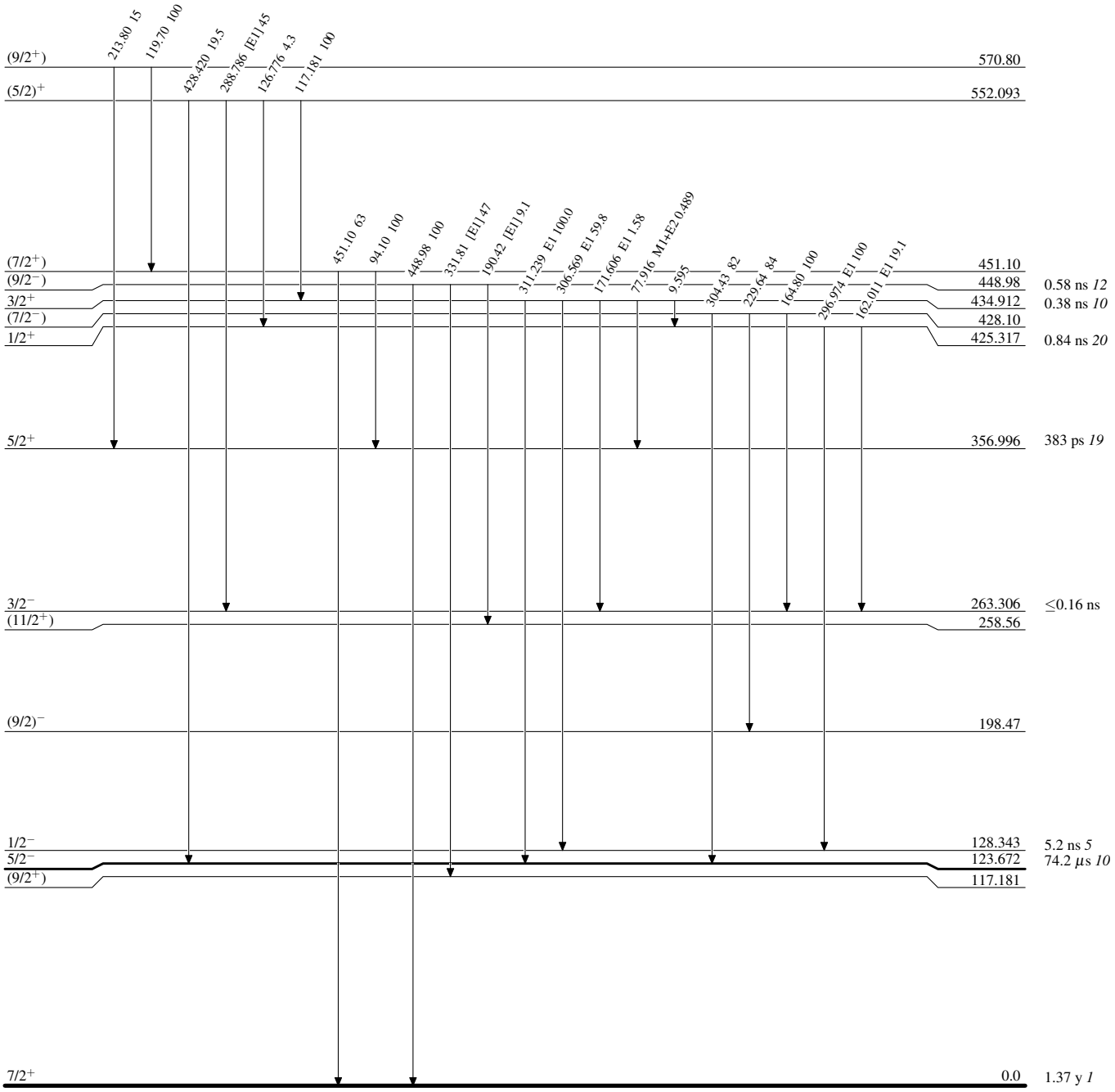


$^{173}_{71}Lu_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

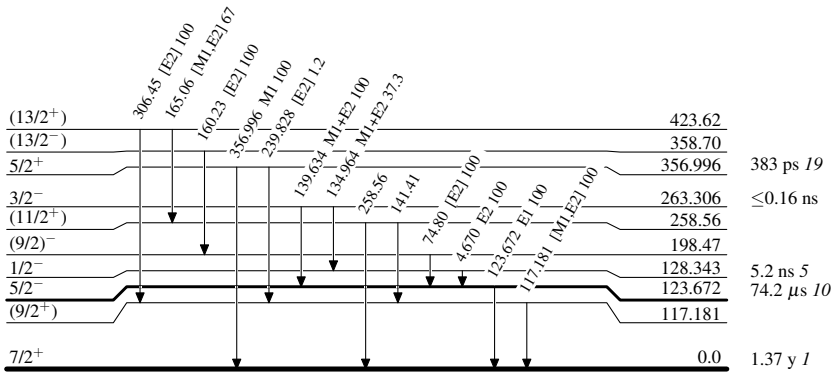


$^{173}_{71}Lu_{102}$

Adopted Levels, Gammas

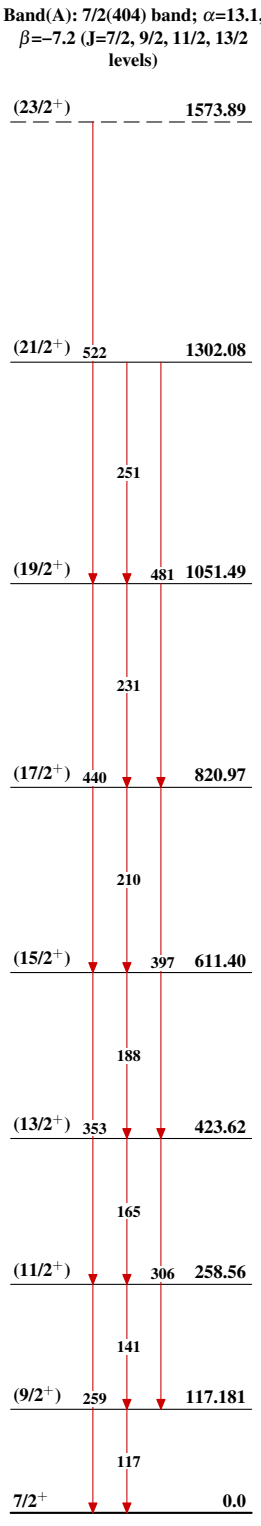
Level Scheme (continued)

Intensities: Relative photon branching from each level



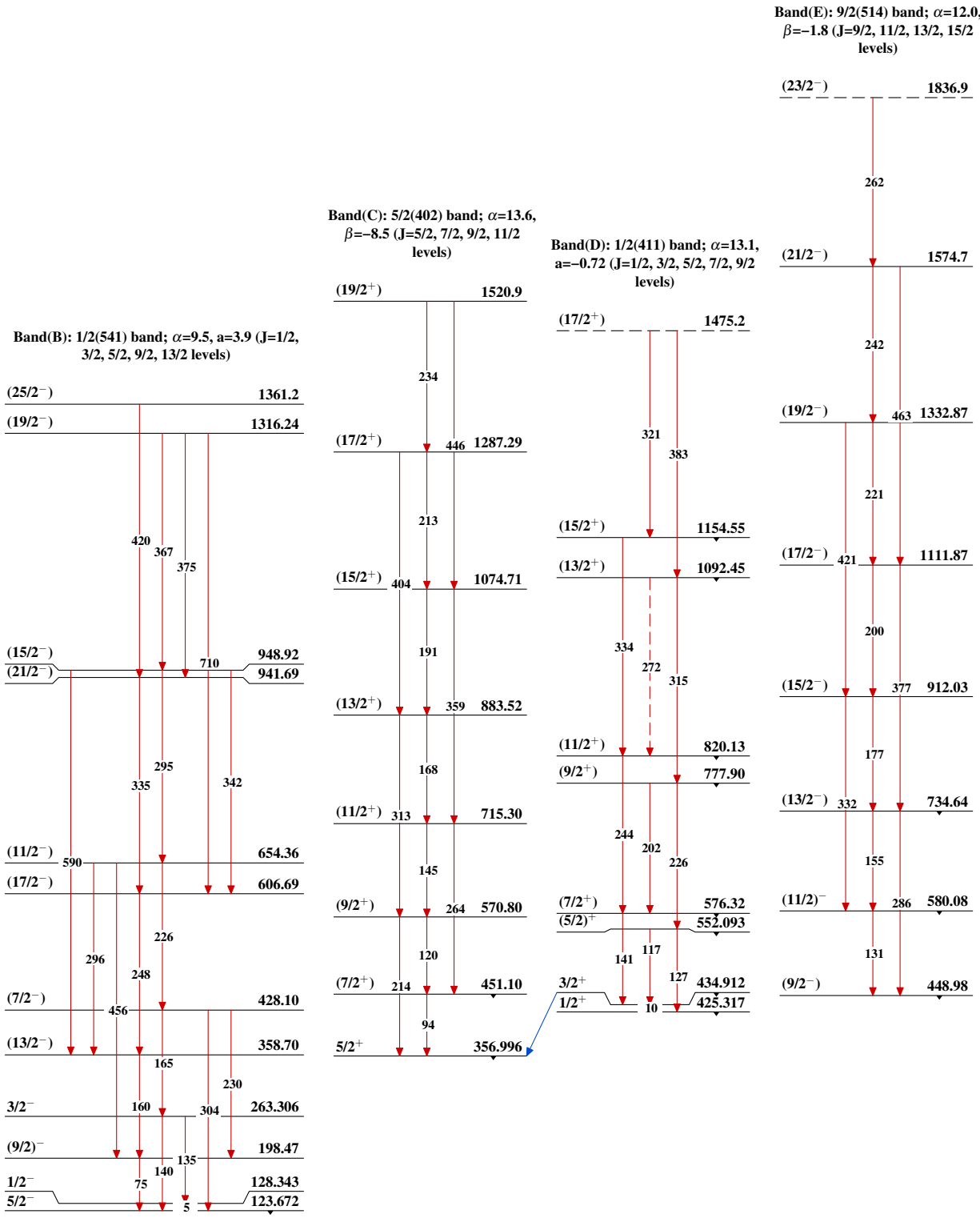
$^{173}_{71}Lu_{102}$

Adopted Levels, Gammas



$^{173}_{71}Lu_{102}$

Adopted Levels, Gammas (continued)



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Adopted Levels, Gammas (continued)

Band(H): 1/2(530) band see comment with 3/2[532] band

$(7/2)^-$ 1275

Band(F): 3/2(532) band erratic spectroscopic factors in ^{172}Yb(^{3}He, d), (α,t) indicate breakdown of Nilsson model at high excitation energy in ^{173}Lu, due to Coriolis coupling between the high-lying states

$(1/2^-)$ 1192.67

$3/2^-$ 1162.432

$(9/2)^-$ 1151

Band(G): (^{172}Yb 1^-)(1/2(541)) band

$3/2^+$ 1003.398

$1/2^+$ 981.807

$(5/2^-)$ 957.77

$(3/2)^-$ 889.225

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