

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Update	M. S. Basunia		31-Jan-2005

$Q(\beta^-) = -2.08 \times 10^3$ 3; $S(n) = 6708.5$ 4; $S(p) = 6200.7$ 22; $Q(\alpha) = 2399.3$ 24 [2012Wa38](#)

Note: Current evaluation has used the following Q record -2080 306708.5 46197.5 222403.4 23 [2003Au03](#).

 ^{175}Hf LevelsCross Reference (XREF) Flags

A	^{175}Ta ε decay	D	^{170}Er ($^9\text{Be}, 4n\gamma$)
B	$^{174}\text{Hf}(n, \gamma)$ E=th	E	$^{176}\text{Hf}(d, t)$
C	$^{174}\text{Yb}(\alpha, 3n\gamma)$	F	$^{130}\text{Te}(^{48}\text{Ca}, 3n\gamma)$

E(level) [†]	J ^π [‡]	T _{1/2}	XREF	Comments
0.0 [#]	5/2 ⁽⁻⁾	70 d 2	ABCDEF	%ε=100 $\mu = -0.539$ 32 $Q = +2.8$ 4 J^π: J=5/2 from laser spectroscopy (1997Ji02). J^π and Nilsson orbital assignments are supported by the following arguments: 1) same Nilsson state as the g.s. in ^{173}Yb isotone. 2) 126γ [E2] from 1/2⁻ has a hindrance consistent with $\Delta K=2$. 3) experimental g-factor is consistent with value calculated using the Nilsson model for 5/2⁻, 5/2[512]. $T_{1/2}$: from 1949Wi11 and 1963Ra14. μ: NMR (1986He10, 1989Ra17, - sign from 1997Ji02). Other values: 0.578 33 (1986He10, 1989Ra17), 0.70 10 (1976Kr11), -0.62 3 (1997Ji02). Q: Static nuclear orientation (1973Ka31, 1989Ra17, + sign from 1997Ji02). Other value: +2.6 2 from laser spectroscopy (1997Ji02). $\Delta\langle r^2 \rangle(^{175}\text{Hf}, ^{174}\text{Hf}) = -0.010$ 11 (1997Ji02).
81.40 [#] 6	7/2 ⁽⁻⁾		ABCDEF	J^π : 81.5 γ M1+E2 to 5/2 ⁽⁻⁾ .
125.89 [@] 12	1/2 ⁻	53.7 μs 15	ABCDEF	J^π: J^π and Nilsson orbital assignments are based on the band's rotational energy spacing, which is characteristic of that in a K=1/2 band. The experimental decoupling parameter agrees well with that expected from the Nilsson model for 1/2[521] orbital. $T_{1/2}$: from $\text{py}(t)$, isomer produced by $^{175}\text{Lu}(p, n)^{175}\text{Hf}$ and $^{176}\text{Lu}(p, 2n)^{175}\text{Hf}$ nuclear reactions (1967Co20). Other value 49 μs 5, isomer produced by photonuclear reaction (1964Br27).
185.73 [#] 10	9/2 ⁽⁻⁾		A CD F	J^π : Intranband 104 γ M1+E2 to 7/2 ⁽⁻⁾ .
196.40 [@] 13	3/2 ⁻		ABCDEF	J^π : 70.5 γ M1+E2 to 1/2 ⁻ .
207.41 ^{&} 5	(7/2 ⁺)	1.55 ns 9	A CD F	J^π: 126γ to 7/2⁽⁻⁾, 207.5γ (E1) to 5/2⁽⁻⁾. $T_{1/2}$: from $\gamma(t)$ in ^{175}Ta ε decay (1964Un01).
213.38 [@] 11	5/2 ⁻		A CDEF	J^π : 87.5 (E2) to 1/2 ⁻ .
257.99 ^{&} 9	(9/2 ⁺)		A CDEF	J^π : 50.5 γ M1+E2 to 7/2 ⁺ .
312.34 [#] 10	(11/2 ⁻)		A CD F	J^π : 231 γ (E2) to 7/2 ⁻ .
334.85 ^{&} 11	(11/2 ⁺)		A CD F	J^π : 77 γ to 9/2 ⁺ .
348.18 ^a 10	7/2 ⁻		A DE	J^π : 162.5 γ M1+E2 to 9/2 ⁻ , 348.5 γ (M1+E2) to 5/2 ⁻ .
375.48 [@] 16	(7/2 ⁻)		ABCDEF	J^π : 179 γ (E2) to 3/2 ⁻ .
406.0 [@] 3	(9/2 ⁻)		A CDEF	J^π : 193 γ (E2) to 5/2 ⁻ .
435.76 ^{&} 11	(13/2 ⁺)		A CDEF	J^π : 101 γ (M1+E2) to (11/2 ⁺).
460.58 [#] 11	(13/2 ⁻)		CD F	J^π : 148 γ (M1+E2) to 11/2 ⁻ .
474.80 ^a 13	(9/2 ⁻)		A E	J^π : 289 γ (M1) to 9/2 ⁻ , 393 γ (M1) to 7/2 ⁻ .
566.26 ^{&} 12	(15/2 ⁺)		CD F	J^π : 130 γ (M1+E2) to (13/2 ⁺).

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Adopted Levels, Gammas (continued) ^{175}Hf Levels (continued)

E(level) [†]	J ^π [‡]	T _{1/2}	XREF	Comments
629.1 ^a 4	(11/2 ⁻)		A	J ^π : 443γ (M1) to 9/2 ⁻ .
629.82 [#] 13	(15/2 ⁻)		CD F	J ^π : 169γ (M1+E2) to 13/2 ⁻ .
643.94 ^b 20	(9/2 ⁺)		A D	J ^π : 309γ (M1) to (11/2 ⁺), 436γ (M1) to 7/2 ⁺ .
655.0 [@] 10	(11/2 ⁻)		CD F	J ^π : 279γ to 7/2 ⁻ .
698.4 [@] 11	(13/2 ⁻)		CD F	J ^π : 292γ (E2) to 9/2 ⁻ .
711.17 ^{&} 12	(17/2 ⁺)		CD F	J ^π : 145γ (M1+E2) to (15/2 ⁺).
732.5 ^c 4	(5/2 ⁺)		A D	J ^π : 525γ (M1+E2) to 7/2 ⁺ .
797.43 ^b 21	(11/2 ⁺)		A	J ^π : 361.5γ (M1) to (13/2 ⁺), 540γ (M1) to 9/2 ⁺ .
807.3 ^c 4	(7/2 ⁺)		A	J ^π : 600γ (M1) to 7/2 ⁺ .
818.7 [#] 3	(17/2 ⁻)		CD F	J ^π : 189γ (M1+E2) to 15/2 ⁻ .
866.8 ^d 4	(1/2 ⁻)		B	J ^π : (n,γ) primary.
897.11 ^{&} 13	(19/2 ⁺)		CD F	J ^π : 331γ (E2) to (15/2 ⁺).
910.2 ^d 5	(3/2 ⁻)		B	J ^π : (n,γ) primary.
941 2	(3/2 ⁻)		E	
965.8 ^b 4	(13/2 ⁺)		EF	XREF: E(962,968). J ^π : 630.9γ (M1+E2) to (11/2 ⁺).
997.7 9	(1/2 ⁻ , 3/2 ⁻)		B E	J ^π : (n,γ) primary.
1025.9 [@] 13	(15/2 ⁻)		CD F	J ^π : 372γ to 11/2 ⁻ .
1027.4 [#] 3	(19/2 ⁻)		CD F	J ^π : Intraband 397γ (E2) to 15/2 ⁻ .
1056 3	(7/2 ⁻)		E	
1060.2 4	(5/2, 7/2, 9/2)		A	
1066 3			E	
1076.17 ^{&} 14	(21/2 ⁺)		CD F	J ^π : 365 (E2) to (17/2 ⁺).
1081 2	(7/2 ⁻)		E	
1082.2 [@] 15	(17/2 ⁻)		CD F	J ^π : 384γ (E2) to 13/2 ⁻ .
1124.1 3	(7/2, 9/2)		A	J ^π : 789γ to (11/2 ⁺).
1139 2	(9/2 ⁻)		E	
1155.97 ^b 22	(15/2 ⁺)		F	J ^π : 720.2γ (M1+E2) to (13/2 ⁺).
1205.81 13	(9/2 ⁻)		A	J ^π : 858γ (M1) to 7/2 ⁻ , 893γ (M1) to 11/2 ⁻ .
1224.88 19	(7/2 ⁻)		A	J ^π : 745γ (M1) to 9/2 ⁻ , 849 (E2) to 7/2 ⁻ .
1248.53 21	(9/2 ⁻)		A E	XREF: E(1252). J ^π : 842γ (M1) to 9/2 ⁻ , 1035γ (E2) to 5/2 ⁻ .
1253.6 [#] 3	(21/2 ⁻)		CD F	J ^π : 227γ (M1+E2) to 19/2 ⁻ .
1322.9 ^{&} 8	(23/2 ⁺)		CD F	J ^π : 426γ (E2) to (19/2 ⁺).
1338.9 ^b 3	(17/2 ⁺)		F	J ^π : 772.6γ (M1+E2) To (15/2 ⁺).
1375.0 11	(1/2, 3/2)		B	J ^π : (n,γ) primary.
1433.41 ^e 12	(19/2 ⁺)	1.10 μs 8	D F	J ^π : 614.5 E1 to 17/2 ⁻ , 722γ M1 to (19/2 ⁺). Deexciting transitions are hindered due to large ΔK. T _{1/2} : from $^{170}\text{Er}(^9\text{Be}, 4n\gamma)$. Experimental population probability isomeric ratio 3% I, theoretical 36.5% (from Be($^{208}\text{Pb}, x$) in 2002Pf01).
1455.7 5	(1/2, 3/2)		B	J ^π : (n,γ) primary.
1466.06 23	(7/2 ⁺)		A	J ^π : 1118γ (E1) to 7/2 ⁻ .
1468.5 4	(5/2 ⁻)		A	J ^π : 1469 (M1) to 5/2 ⁻ .
1478.3 [@] 14	(19/2 ⁻)		CD F	J ^π : 452γ to 15/2 ⁻ .
1497.5 [#] 7	(23/2 ⁻)		CD F	J ^π : 470.5γ (E2) to 19/2 ⁻ .
1523.4 ^{&} 8	(25/2 ⁺)		CD F	J ^π : 447γ (E2) to (21/2 ⁺).
1545.61 ^e 21	(21/2 ⁺)		D F	J ^π : 112γ to (19/2 ⁺).
1547.4 [@] 18	(21/2 ⁻)		CD F	J ^π : 465γ to 17/2 ⁻ .
1584 2			E	
1606.04 21	(9/2 ⁺)		A	J ^π : 809γ (M1) to 11/2 ⁺ , 1399 (E2) to 7/2 ⁺ .

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Adopted Levels, Gammas (continued) ^{175}Hf Levels (continued)

E(level) [†]	J ^π [‡]	T _{1/2}	XREF	Comments
1635 2			E	
1642.8 13	(1/2,3/2)		B	J ^π : (n,γ) primary.
1646.92 ^f 25	(21/2 ⁺)		D F	J ^π : 119γ dipole from (23/2 ⁺).
1658.87 24	(5/2 ⁺ ,7/2 ⁺)		A	J ^π : 1659 (E1) to (5/2 ⁻).
1671 2			E	
1735.6 ^e 7	(23/2 ⁺)		D	J ^π : 190γ (M1+E2) to (21/2 ⁺).
1746.6 5	(5/2 ⁺ ,7/2 ⁺ ,9/2 ⁺)		A E	
1757.3 [#] 3	(25/2 ⁻)		CD F	J ^π : 503.5γ (E2) to 21/2 ⁻ .
1766.30 ^g 23	(23/2 ⁻)	1.16 ns 11	D F	J ^π : 221γ (D) to (21/2 ⁺). T _{1/2} : from $^{170}\text{Er}(^9\text{Be},4n\gamma)$.
1793.34 20	(5/2 ⁺)		A	J ^π : 1793γ (E1) to 5/2 ⁻ .
1802.8 3	(9/2 ⁻)		A	J ^π : 1490.5γ (E2) to 11/2 ⁻ .
1818.14 21	(9/2 ⁺)		A	J ^π : 1174γ (M1) to 9/2 ⁺ , 1483γ (M1) to (11/2 ⁺), 1611γ (M1) to 7/2 ⁺ and 1737γ (E1) to 7/2 ⁻ .
1825.71 23	(7/2 ⁺)		A	J ^π : 1618 (M1) to 7/2 ⁺ , 1744γ (E1) to 7/2 ⁻ and 1826γ (E1) to 5/2 ⁻ .
1837.0 ^{&} 13	(27/2 ⁺)		CD F	J ^π : 514γ to (23/2 ⁺).
1887.8 4			A	
1893.88 21	(9/2 ⁺)		A	J ^π : 1096γ (M1) to 11/2 ⁺ , 1636γ (M1) to 9/2 ⁺ .
1904.4 ^g 3	(25/2 ⁻)		D F	J ^π : 138γ (M1+E2) to (23/2 ⁻).
1954.1 ^e 8	(25/2 ⁺)		D	J ^π : 218.5γ (M1+E2) to (23/2 ⁺).
2000.0 [@] 14	(23/2 ⁻)		CD F	J ^π : 521γ to 19/2 ⁻ .
2033.3 [#] 11	(27/2 ⁻)		D F	J ^π : 536γ to (23/2 ⁻).
2047.1 ^{&} 8	(29/2 ⁺)		D F	J ^π : 523γ to (25/2 ⁺).
2081.8 [@] 21	(25/2 ⁻)		CD F	J ^π : 534γ to 21/2 ⁻ .
2114.2 ^g 3	(27/2 ⁻)		D F	J ^π : 210γ to (25/2 ⁻), 348γ to (23/2 ⁻).
2195.7 ^e 9	(27/2 ⁺)		D	J ^π : 241.5γ (M1+E2) to (25/2 ⁺), 460γ to (23/2 ⁺).
2322.4 [#] 4	(29/2 ⁻)		D F	J ^π : 565γ (E2) to 25/2 ⁻ .
2360.1 ^g 3	(29/2 ⁻)		D F	J ^π : 246γ to (27/2 ⁻).
2432.5 ^{&} 16	(31/2 ⁺)		D F	J ^π : 595.5γ to (27/2 ⁺).
2458.7 ^e 10	(29/2 ⁺)		D	J ^π : 263γ (M1+E2) to (27/2 ⁺), 504.5γ to (25/2 ⁺).
2580.2 [@] 13	(27/2 ⁻)		D F	
2627.6 [#] 11	(31/2 ⁻)		D F	
2634.3 ^g 3	(31/2 ⁻)		D F	J ^π : 264γ to (29/2 ⁻), 520γ to (27/2 ⁻).
2639.6 ^{&} 8	(33/2 ⁺)		D F	
2677.8 [@] 23	(29/2 ⁻)		D F	
2742.0 ^e 11	(31/2 ⁺)		D	
2932.9 ^g 3	(33/2 ⁻)		D F	J ^π : 299γ to (31/2 ⁻), 573γ to (29/2 ⁻).
2941.2 [#] 5	(33/2 ⁻)		D F	
3015.6 ^h 4	(35/2 ⁻)	1.21 μs 15	D F	T _{1/2} : from $^{170}\text{Er}(^9\text{Be},4n\gamma)$. Experimental population probability isomeric ratio 2.5% 6, theoretical 3.8% (from Be(^{208}Pb ,x) in 2002Pf01).
3044.4 ^e 12	(33/2 ⁺)		D	J ^π : 302γ to (31/2 ⁺), 586γ to (29/2 ⁺).
3101.5 ^{&} 19	(35/2 ⁺)		F	
3200.7 [@] 11	(31/2 ⁻)		F	
3253.8 ^g 6	(35/2 ⁻)		F	
3293.6 ^{&} 8	(37/2 ⁺)		D F	
3305.7 ^h 9	(37/2 ⁻)		D F	J ^π : 290γ (M1+E2) to (35/2).
3325.8 [@] 25	(33/2 ⁻)		F	
3593.8 ^g 7	(37/2 ⁻)		F	

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Adopted Levels, Gammas (continued) ^{175}Hf Levels (continued)

E(level) [†]	J ^π [‡]	T _{1/2}	XREF	Comments
3629.7 ^h 10	(39/2 ⁻)		D F	J ^π : 324γ (M1+E2) to (37/2).
3725 ^j 7	(31/2 ⁻)		F	
3819.6 ⁱ 9	(39/2 ⁺)	≈7 ns	F	T _{1/2} : Estimated from the intensity balance arguments in $^{130}\text{Te}(^{48}\text{Ca},3n\gamma)$.
3835.5 ^{&} 22	(39/2 ⁺)		F	
3856.1 [@] 7	(35/2 ⁻)		F	
3951.8 ^g 9	(39/2 ⁻)		F	
3977.9 ^h 11	(41/2 ⁻)		D F	
4001.1 ^{&} 8	(41/2 ⁺)		F	
4019 [@] 3	(37/2 ⁻)		F	
4155.8 ^j 11	(35/2 ⁻)		F	
4157.4 ⁱ 11	(41/2 ⁺)		F	
4344.9 ^h 11	(43/2 ⁻)		F	
4486.9 [@] 7	(39/2 ⁻)		F	
4505.4 ⁱ 11	(43/2 ⁺)		F	
4625.5 ^{&} 24	(43/2 ⁺)		F	
4636.2 12	(45/2 ⁺)	2.8 μs	F	T _{1/2} : From 2001DrZZ. Estimated to be ≈a few microseconds in 1990Gj01 based on absence of γ's from associated rotational band in spectra gated on lower transitions.
4645.3 ^j 10	(39/2 ⁻)		F	
4727.9 ^h 12	(45/2 ⁻)		F	
4748 [@] 3	(41/2 ⁻)		F	
4756.1 ^{&} 13	(45/2 ⁺)		F	
5123.9 ^h 13	(47/2 ⁻)		F	
5171.3 [@] 8	(43/2 ⁻)		F	
5194.2 ^j 9	(43/2 ⁻)		F	
5458 ^{&} 3	(47/2 ⁺)		F	
5517 [@] 3	(45/2 ⁻)		F	
5531.9 ^h 14	(49/2 ⁻)		F	
5556.1 ^{&} 16	(49/2 ⁺)		F	
5786.0 ^j 9	(47/2 ⁻)		F	
5949.0 ^h 15	(51/2 ⁻)		F	
6315 ^{&} 3	(51/2 ⁺)		F	
6330 [@] 4	(49/2 ⁻)		F	
6371.7 ^h 15	(53/2 ⁻)		F	
6403.1 ^{&} 19	(53/2 ⁺)		F	
6444.2 ^j 11	(51/2 ⁻)		F	
6510.1 17	(53/2 ⁺)	≤7 ns	F	J ^π : 9-quasiparticle intrinsic state. T _{1/2} : From $^{130}\text{Te}(^{48}\text{Ca},3n\gamma)$.
6794.3 ^h 16	(55/2 ⁻)		F	
7161.1 ^j 13	(55/2 ⁻)		F	
7181 ^{&} 3	(55/2 ⁺)		F	
7191 [@] 4	(53/2 ⁻)		F	
7300.1 ^{&} 22	(57/2 ⁺)		F	
7455.2 17	(57/2 ⁻)	>7 ns	F	J ^π : 9-quasiparticle intrinsic state. T _{1/2} : Estimated from recoil-shadow arrangement used in experiment (recoil stopped after ~10 ns flight time) ($^{130}\text{Te}(^{48}\text{Ca},3n\gamma)$ in 1990Gj01).

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Adopted Levels, Gammas (continued) ^{175}Hf Levels (continued)

E(level) [†]	J ^π [‡]	XREF	E(level) [†]	J ^π [‡]	XREF	E(level) [†]	J ^π [‡]	XREF
7936.9 ^j 14	(59/2 ⁻)	F	10621.6 ^j 18	(71/2 ⁻)	F	15277.0 ^k 24	(91/2 ⁻)	F
8052 ^{&} 3	(59/2 ⁺)	F	10893 ^{&} 4	(71/2 ⁺)	F	16245.5 ^k 25	(95/2 ⁻)	F
8087 [@] 4	(57/2 ⁻)	F	11629.5 ^j 19	(75/2 ⁻)	F	17270 ^k 4	(99/2 ⁻)	F
8249.1 ^{&} 24	(61/2 ⁺)	F	11958 ^{&} 4	(75/2 ⁺)	F	18354 ^k 4	(103/2 ⁻)	F
8773.0 ^j 17	(63/2 ⁻)	F	12680.4 ^j 20	(79/2 ⁻)	F	19498 ^k 4	(107/2 ⁻)	F
8946 ^{&} 4	(63/2 ⁺)	F	12687.3 ^k 20	(79/2 ⁻)	F	20705 ^k 4	(111/2 ⁻)	F
9246 ^{&} 3	(65/2 ⁺)	F	13091 ^{&} 4	(79/2 ⁺)	F	21977 ^k 4	(115/2 ⁻)	F
9668.3 ^j 17	(67/2 ⁻)	F	13499.3 ^k 20	(83/2 ⁻)	F	23313 ^k 4	(119/2 ⁻)	F
9890 ^{&} 4	(67/2 ⁺)	F	13746.4 ^j 23	(83/2 ⁻)	F	24714 ^k 4	(123/2 ⁻)	F
10279 ^{&} 3	(69/2 ⁺)	F	14362.3 ^k 23	(87/2 ⁻)	F	26178.4 ^k	(127/2 ⁻)	F

[†] Deduced by evaluator from a least-squares fit to the adopted gamma energies.

[‡] In addition to specific arguments given with individual levels, J^π assignments are based on rotational structure, γ -ray decay patterns, on the agreement between experimental and DWBA relative (d,t) cross sections and on the energy systematics of rotational and Nilsson states in neighboring hafnium and ytterbium nuclei.

Band(A): 5/2(512) band.

@ Band(B): 1/2(521) band.

& Band(C): 7/2(633) band.

^a Band(D): 7/2(514) band.

^b Band(E): 9/2(624) band.

^c Band(F): 5/2(642)? band.

^d Band(G): 1/2(510)? band.

^e Band(H): $K^\pi=(19/2^+)$ band ; 3-quasiparticle intrinsic band, 7/2[633]n coupled to $\pi^2 5/2[402] \otimes 7/2[404]$ (1549-keV ^{174}Hf state).

^f Band(I): $K^\pi=(21/2^+)$ band.

^g Band(J): $K^\pi=(23/2^-)$ band ; 3-quasiparticle intrinsic band, 7/2[633]n coupled to $\pi^2 7/2[404] \otimes 9/2[514]$ (1797-keV ^{174}Hf state).

^h Band(K): $K^\pi=(35/2^-)$; 5-quasiparticle intrinsic band; possible conf: $\nu 7/2[633] + \nu 5/2[512] + \nu 7/2[514] + \pi 7/2[404] + \pi 9/2[514]$ (1990Gj01).

ⁱ Band(L): $K^\pi=(39/2^+)$; 5-quasiparticle intrinsic band; possible conf: $\nu 7/2[633] + \nu 9/2[624] + \nu 7/2[514] + \pi 7/2[404] + \pi 9/2[514]$ (1990Gj01).

^j BAND 1.

^k BAND 2.

Adopted Levels, Gammas (continued)

$\gamma(^{175}\text{Hf})$									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	$\delta^\ddagger$	α^c	Comments
81.40	7/2 ⁽⁻⁾	81.39 ^{&} 9	100	0.0	5/2 ⁽⁻⁾	M1+E2	0.26	7.48	
125.89	1/2 ⁻	125.9 2	100	0.0	5/2 ⁽⁻⁾	[E2]		1.49	B(E2)(W.u.)=0.00230 8
185.73	9/2 ⁽⁻⁾	104.21 ^{&} 14	100 13	81.40	7/2 ⁽⁻⁾	M1+E2	0.23	3.62	
		185.6 ^{&} 3	21 3	0.0	5/2 ⁽⁻⁾	(E2)		0.372	
196.40	3/2 ⁻	70.5 1	≈100	125.89	1/2 ⁻	M1+E2	0.92	13.0	
		115.7 ^b 20	22	81.40	7/2 ⁽⁻⁾				I_γ : 22 in comparison to I_γ of 196.4 γ in $^{174}\text{Hf}(\text{n},\gamma)$.
		196.4 3	50 13	0.0	5/2 ⁽⁻⁾				
207.41	(7/2 ⁺)	126.00 ^{&} 6	41 9	81.40	7/2 ⁽⁻⁾	[E1]		0.197	B(E1)(W.u.)=1.9×10 ⁻⁵ 5
		207.39 ^{&} 5	100 6	0.0	5/2 ⁽⁻⁾	(E1)		0.0540	B(E1)(W.u.)=1.00×10 ⁻⁵ 10
213.38	5/2 ⁻	87.5 1	≈100	125.89	1/2 ⁻	(E2)		6.09	
		132.0 2		81.40	7/2 ⁽⁻⁾				
		213.4 3	<67	0.0	5/2 ⁽⁻⁾				
257.99	(9/2 ⁺)	50.5 1	≈100	207.41	(7/2 ⁺)	M1+E2	0.36	12.3	
		72.5 ^a 3	5.2 ^a 7	185.73	9/2 ⁽⁻⁾				
		178 1	76 11	81.40	7/2 ⁽⁻⁾				I_γ : value from doublet in ^{175}Ta ε decay.
312.34	(11/2 ⁻)	126.59 ^{&} 14	51 17	185.73	9/2 ⁽⁻⁾				I_γ : 60.5 16 in $^{130}\text{Te}(^{48}\text{Ca},3\text{n}\gamma)$ deduced from $\text{I}(\gamma+\text{ce})$.
		230.81 ^{&} 24	100 6	81.40	7/2 ⁽⁻⁾	(E2)		0.181	
334.85	(11/2 ⁺)	76.85 ^a 11	100 ^a 14	257.99	(9/2 ⁺)				
		127.6 ^a 26	6 ^a 2	207.41	(7/2 ⁺)				
348.18	7/2 ⁻	35.8 1		312.34	(11/2 ⁻)				
		90.0 9	3.3 10	257.99	(9/2 ⁺)				
		140.9 2	19.3 23	207.41	(7/2 ⁺)	(E1)		0.147	
		162.5 2	12.3 23	185.73	9/2 ⁽⁻⁾	M1+E2	0.4	0.974	
		266.9 ^f 4	90 ^f 11	81.40	7/2 ⁽⁻⁾	(M1)		0.262	
		348.5 5	100 5	0.0	5/2 ⁽⁻⁾	(M1+E2)	1.08	0.087	
375.48	(7/2 ⁻)	162.0 2	66 34	213.38	5/2 ⁻	(E2)		0.598	
		179.1 3	100 16	196.40	3/2 ⁻	(E2)		0.422	
		294.0 4	13 3	81.40	7/2 ⁽⁻⁾				
406.0	(9/2 ⁻)	192.7 3	100	213.38	5/2 ⁻	(E2)		0.329	
435.76	(13/2 ⁺)	100.92 ^{&} 7	100 4	334.85	(11/2 ⁺)	(M1+E2) [#]		3.8 3	I_γ : From $^{170}\text{Er}(^9\text{Be},4\text{n}\gamma)$.
		177.76 ^{&} 8	98 10	257.99	(9/2 ⁺)				I_γ : From $^{170}\text{Er}(^9\text{Be},4\text{n}\gamma)$.
460.58	(13/2 ⁻)	148.24 ^a 8	63 ^a 4	312.34	(11/2 ⁻)	(M1+E2) [#]		1.1 3	
		274.83 ^a 14	100 ^a 9	185.73	9/2 ⁽⁻⁾				
474.80	(9/2 ⁻)	126.6 2	13 6	348.18	7/2 ⁻				
		162.5 2	8.1 15	312.34	(11/2 ⁻)				
		216.4 3	8.9 11	257.99	(9/2 ⁺)				
		266.9 ^f 4	21 ^f 8	207.41	(7/2 ⁺)				

Adopted Levels, Gammas (continued)

$\gamma(^{175}\text{Hf})$ (continued)								
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	α^C	Comments
474.80	(9/2 ⁻)	288.9 4	70 8	185.73	9/2 ⁽⁻⁾	(M1)	0.211	
		393.2 6	100 8	81.40	7/2 ⁽⁻⁾	(M1)	0.0925	
		475.0 7	96 9	0.0	5/2 ⁽⁻⁾	(E2)	0.0222	
566.26	(15/2 ⁺)	130.49 ^a 6	81 ^a 8	435.76	(13/2 ⁺)	(M1+E2) [#]	1.6 3	
		231.41 ^a 9	100 ^a 12	334.85	(11/2 ⁺)			
629.1	(11/2 ⁻)	280.5 ^g 4		348.18	7/2 ⁻			
		443.3 7	100 23	185.73	9/2 ⁽⁻⁾	(M1)	0.0677	
629.82	(15/2 ⁻)	169.25 ^a 11	44 ^a 6	460.58	(13/2 ⁻)	(M1+E2) [#]	0.72 20	
		317.49 ^a 10	100 ^a 12	312.34	(11/2 ⁻)	(E2) [#]	0.0675	
643.94	(9/2 ⁺)	308.9 4	4.3 12	334.85	(11/2 ⁺)	(M1)	0.177	
		331.1 6	1.4 6	312.34	(11/2 ⁻)			
		386.0 6	15.9 15	257.99	(9/2 ⁺)	(M1)	0.0972	
		436.4 7	100 10	207.41	(7/2 ⁺)	(M1)	0.0704	
655.0	(11/2 ⁻)	279.1 [@]	100 [@]	375.48	(7/2 ⁻)			
698.4	(13/2 ⁻)	292.4 [@]	100 [@]	406.0	(9/2 ⁻)	(E2) [#]	0.0863	
711.17	(17/2 ⁺)	144.93 ^a 7	100 ^a 10	566.26	(15/2 ⁺)	(M1+E2)	1.2 3	
		275.42 ^a 5	90 ^a 7	435.76	(13/2 ⁺)			
732.5	(5/2 ⁺)	525.0 4	100	207.41	(7/2 ⁺)	(M1+E2)	0.031 13	
797.43	(11/2 ⁺)	361.4 5	35 4	435.76	(13/2 ⁺)	(M1)	0.116	
		461.9 7	24 5	334.85	(11/2 ⁺)	(M1+E2)	0.042 18	
		485.6 6	15 4	312.34	(11/2 ⁻)			
		539.6 3	100 13	257.99	(9/2 ⁺)	(M1)	0.0408	
807.3	(7/2 ⁺)	549.5 8	32 14	257.99	(9/2 ⁺)			
		599.8 4	100 19	207.41	(7/2 ⁺)	(M1)	0.0311	
818.7	(17/2 ⁻)	189.1	62	629.82	(15/2 ⁻)	(M1+E2) [#]	0.51 16	E_γ : From $^{170}\text{Er}(^9\text{Be},4n\gamma)$. I_γ : From $^{174}\text{Yb}(\alpha,3n\gamma)$. E_γ : From $^{170}\text{Er}(^9\text{Be},4n\gamma)$. I_γ : From $^{174}\text{Yb}(\alpha,3n\gamma)$.
		358.4	100	460.58	(13/2 ⁻)			
866.8	(1/2 ⁻)	670.4 6	100	196.40	3/2 ⁻			
		866.8 6	42	0.0	5/2 ⁽⁻⁾			
897.11	(19/2 ⁺)	186.18 ^a 9	27 ^a 5	711.17	(17/2 ⁺)	(M1+E2) ^{&}		
		330.74 ^a 11	100 ^a 12	566.26	(15/2 ⁺)	(E2) [#]	0.0599	
910.2	(3/2 ⁻)	713.8 7	91 18	196.40	3/2 ⁻			
		784.3 7	100 20	125.89	1/2 ⁻			
965.8	(13/2 ⁺)	399.5 ^a 25	48 ^a 10	566.26	(15/2 ⁺)			
		529.9 ^a 11	48 ^a 14	435.76	(13/2 ⁺)			
		630.9 ^a 10	100 ^a 29	334.85	(11/2 ⁺)			
		707.8 9		257.99	(9/2 ⁺)			

Adopted Levels, Gammas (continued)

 $\gamma(^{175}\text{Hf})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult. [‡]	δ [‡]	α^c
997.7	(1/2 ⁻ , 3/2 ⁻)	997.7 9	100	0.0	5/2 ⁽⁻⁾			
1025.9	(15/2 ⁻)	370.5@	100@	655.0	(11/2 ⁻)			
1027.4	(19/2 ⁻)	208.6 ^a 13	100 ^a 17	818.7	(17/2 ⁻)			
		397.6 ^a 3	87 ^a 17	629.82	(15/2 ⁻)	(E2)		0.0357
1060.2	(5/2, 7/2, 9/2)	801.1 10	70 37	257.99	(9/2 ⁺)			
		852.3 6	100 67	207.41	(7/2 ⁺)			
1076.17	(21/2 ⁺)	179.18 ^a 9	26 ^a 3	897.11	(19/2 ⁺)	(M1+E2)&		
		364.84 ^a 11	100 ^a 10	711.17	(17/2 ⁺)	(E2) [#]		0.0452
1082.2	(17/2 ⁻)	383.8@	100@	698.4	(13/2 ⁻)	(E2) [#]		0.0392
1124.1	(7/2, 9/2)	789.1 9	23 8	334.85	(11/2 ⁺)			
		866.3 4	100 10	257.99	(9/2 ⁺)			
		915.8 7	13 8	207.41	(7/2 ⁺)			
1155.97	(15/2 ⁺)	190.2 ^a 18	16 ^a 4	965.8	(13/2 ⁺)			
		444.8 ^a 3	41 ^a 12	711.17	(17/2 ⁺)			
		589.7 ^a 3	31 ^a 12	566.26	(15/2 ⁺)			
		720.2 ^a 5	100 ^a 20	435.76	(13/2 ⁺)			
		821 ^a 3	11 ^a 6	334.85	(11/2 ⁺)			
1205.81	(9/2 ⁻)	561.6 4	4.6 11	643.94	(9/2 ⁺)			
		730.6 4	16 2	474.80	(9/2 ⁻)	(M1)		0.0188
		857.7 3	100 9	348.18	7/2 ⁻	(M1)		0.0126
		893.5 7	4.8 15	312.34	(11/2 ⁻)	(M1)		0.0114
		947.1 11	6 4	257.99	(9/2 ⁺)			
		992.44 18	7.3 24	213.38	5/2 ⁻			
		998.3 4	80 9	207.41	(7/2 ⁺)	(E1)		
		1019.5 6	13 5	185.73	9/2 ⁽⁻⁾			
		1124.5 7	4.5 11	81.40	7/2 ⁽⁻⁾			
		1205.8 6	15 4	0.0	5/2 ⁽⁻⁾			
1224.88	(7/2 ⁻)	749.5 4	9.7 18	474.80	(9/2 ⁻)	(M1)		0.0176
		819.2 11	1.9 15	406.0	(9/2 ⁻)			
		849.1 4	19.7 24	375.48	(7/2 ⁻)	(E2)		
		876.4 4	31 3	348.18	7/2 ⁻	(M1)		0.0119
		967.0 12	8 3	257.99	(9/2 ⁺)			
		1144.1 5	45 13	81.40	7/2 ⁽⁻⁾	(M1)		
		1225.6 4	100 15	0.0	5/2 ⁽⁻⁾			
1248.53	(9/2 ⁻)	619.4 ^e 4	<66 ^e	629.1	(11/2 ⁻)			
		774 1	5.0 25	474.80	(9/2 ⁻)			
		842.7 6	16 8	406.0	(9/2 ⁻)	(M1)		0.0132
		872.9 5	40 6	375.48	(7/2 ⁻)	(M1+E2)	0.89 74	
		900.2 4	85 10	348.18	7/2 ⁻	(M1)		0.0112

Adopted Levels, Gammas (continued)

$\gamma(^{175}\text{Hf})$ (continued)								
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	α^C	Comments
1248.53	(9/2 ⁻)	990.5 ^e 5	<70 ^e	257.99	(9/2 ⁺)			
		1035.4 4	100 15	213.38	5/2 ⁻	(E2)		
		1061.9 11	<30	185.73	9/2 ⁽⁻⁾			
		1249.0 13	75 25	0.0	5/2 ⁽⁻⁾			
1253.6	(21/2 ⁻)	226.3 ^{&} 4	82 4	1027.4	(19/2 ⁻)	(M1+E2) [#]	0.30 11	I_γ : From $^{170}\text{Er}(^9\text{Be}, 4n\gamma)$.
		434.88 ^{&} 18	100 4	818.7	(17/2 ⁻)	(E2) [#]	0.0279	I_γ : From $^{170}\text{Er}(^9\text{Be}, 4n\gamma)$.
1322.9	(23/2 ⁺)	246.8 [@]	26 [@] 4	1076.17	(21/2 ⁺)	(M1+E2)		
		425.7 [@]	100 [@] 4	897.11	(19/2 ⁺)	(E2)	0.0295	
1338.9	(17/2 ⁺)	182.9 ^a 3	23 ^a 13	1155.97	(15/2 ⁺)			
		373.1 ^a 4	20 ^a 6	965.8	(13/2 ⁺)			
		441.9 ^a 8	75 ^a 16	897.11	(19/2 ⁺)			
		627.7 ^a 16	35 ^a 14	711.17	(17/2 ⁺)			
		772.6 ^a 7	100 ^a 23	566.26	(15/2 ⁺)			
1375.0	(1/2,3/2)	1375.0 11	100	0.0	5/2 ⁽⁻⁾			
1433.41	(19/2 ⁺)	357.40 ^a 20	11 ^a 1	1076.17	(21/2 ⁺)			
		536.42 ^a 19	13 ^a 1	897.11	(19/2 ⁺)			
		614.8 ^{&} 3	42.1 10	818.7	(17/2 ⁻)	E1 [#]		B(E1)(W.u.)= 1.3×10^{-10} 4
		722.23 ^a 3	100 ^a 4	711.17	(17/2 ⁺)	M1 [#]	0.0194	I_γ : from $^{170}\text{Er}(^9\text{Be}, 4n\gamma)$.
		867.16 ^a 8	39 ^a 4	566.26	(15/2 ⁺)	E2 [#]		B(M1)(W.u.)= 2.0×10^{-8} 6
1455.7	(1/2,3/2)	588.9 9	62 13	866.8	(1/2 ⁻)			B(E2)(W.u.)= 2.5×10^{-6} 7
		1374.2 8	<90	81.40	7/2 ⁽⁻⁾			
		1455.7 8	100 20	0.0	5/2 ⁽⁻⁾			
1466.06	(7/2 ⁺)	259.8 4	65 15	1205.81	(9/2 ⁻)			
		990.5 ^e 5	<70 ^e	474.80	(9/2 ⁻)			
		1091.3 9	23 5	375.48	(7/2 ⁻)			
		1118.4 5	100 25	348.18	7/2 ⁻	(E1)		
		1208.5 7	70 15	257.99	(9/2 ⁺)			
		1259.2 8	60 15	207.41	(7/2 ⁺)			
		1386 1	15 5	81.40	7/2 ⁽⁻⁾			
		1465.6 13	25 15	0.0	5/2 ⁽⁻⁾			
1468.5	(5/2 ⁻)	1120.3 15	<54	348.18	7/2 ⁻			
		1210.6 5	100 20	257.99	(9/2 ⁺)			
		1261.1 10	33 13	207.41	(7/2 ⁺)			
		1468.3 7	93 27	0.0	5/2 ⁽⁻⁾	(M1)		
1478.3	(19/2 ⁻)	451.9 [@]	100 [@]	1025.9	(15/2 ⁻)			
1497.5	(23/2 ⁻)	243.7 [@]	14 [@] 3	1253.6	(21/2 ⁻)			
		470.3 [@]	100 [@] 5	1027.4	(19/2 ⁻)	(E2) [#]	0.0227	

Adopted Levels, Gammas (continued)

$\gamma(^{175}\text{Hf})$ (continued)									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	$\delta^\ddagger$	α^c	Comments
1523.4	(25/2 ⁺)	447.3 @	100 @	1076.17	(21/2 ⁺)	(E2) [#]		0.0259	
1545.61	(21/2 ⁺)	112.21 ^a 20	100 ^a	1433.41	(19/2) ⁺				
1547.4	(21/2 ⁻)	465.2 @	100 @	1082.2	(17/2 ⁻)				
1606.04	(9/2 ⁺)	400.8 13	1.7 17	1205.81	(9/2 ⁻)				
		545.2 5	8.9 19	1060.2	(5/2,7/2,9/2)				
		808.6 4	96 6	797.43	(11/2 ⁺)	(M1)		0.0146	
		962.1 4	100 14	643.94	(9/2 ⁺)				
		1271.1 5	42 11	334.85	(11/2 ⁺)				
		1293.3 6	31 4	312.34	(11/2 ⁻)				
		1348.9 10	19 8	257.99	(9/2 ⁺)				
		1399.2 6	21.9 17	207.41	(7/2 ⁺)	(E2)			
		1419.0 10	7 3	185.73	9/2 ⁽⁻⁾				
		1525.9 7	9 4	81.40	7/2 ⁽⁻⁾				
1642.8	(1/2,3/2)	1446.0 15	44	196.40	3/2 ⁻				
		1644.0 25	100	0.0	5/2 ⁽⁻⁾				
1646.92	(21/2 ⁺)	101.3 ^a 3	100 ^a 11	1545.61	(21/2 ⁺)				
		213.5 ^a 3	96 ^a 10	1433.41	(19/2) ⁺				
1658.87	(5/2 ⁺ ,7/2 ⁺)	925.2 7	11 4	732.5	(5/2 ⁺)				
		1282.8 9	19 7	375.48	(7/2 ⁻)				
		1446.6 ^f 7	<30 ^f	213.38	5/2 ⁻				
		1451.6 5	34 8	207.41	(7/2 ⁺)				
		1462.0 6	27 7	196.40	3/2 ⁻				
		1577.0 9	13 5	81.40	7/2 ⁽⁻⁾				
		1659.2 4	100 11	0.0	5/2 ⁽⁻⁾	(E1)			
1735.6	(23/2 ⁺)	189.9 @ @	100 @ @ 11	1545.61	(21/2 ⁺)	(M1+E2)	+0.25 +7-13	0.649	
		302.2 ^d @	<38 @	1433.41	(19/2) ⁺				
1746.6	(5/2 ⁺ ,7/2 ⁺ ,9/2 ⁺)	280.5 4	100	1466.06	(7/2 ⁺)	(M1+E2)		0.16 7	
1757.3	(25/2 ⁻)	503.70 ^a 15	100 ^a 20	1253.6	(21/2 ⁻)	(E2)		0.0192	
1766.30	(23/2 ⁻)	119.4 ^a 4	14 ^a 1	1646.92	(21/2 ⁺)	(D) [#]			I _γ : 25 4 in ¹⁷⁰ Er(⁹ Be,4n γ).
		220.70 ^a 13	100 ^a 3	1545.61	(21/2 ⁺)	(D) [#]			
1793.34	(5/2 ⁺)	1446.6 ^f 7	<7 ^f	348.18	7/2 ⁻				
		1586.0 4	35 5	207.41	(7/2 ⁺)				
		1711.8 4	25 3	81.40	7/2 ⁽⁻⁾				
		1793.1 3	100 12	0.0	5/2 ⁽⁻⁾	(E1)			
1802.8	(9/2 ⁻)	1490.1 5	69 10	312.34	(11/2 ⁻)	(E2)			
		1616 1	≈31	185.73	9/2 ⁽⁻⁾				
		1721.8 4	100 14	81.40	7/2 ⁽⁻⁾				
1818.14	(9/2 ⁺)	1021.6 8	≤4.4	797.43	(11/2 ⁺)				

Adopted Levels, Gammas (continued)

$\gamma(^{175}\text{Hf})$ (continued)									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	$\delta^\ddagger$	α^c	Comments
1818.14	(9/2 ⁺)	1087.7 11	13 9	732.5 (5/2 ⁺)					
		1174.0 7	24 10	643.94 (9/2 ⁺)		(M1)			
		1483.0 4	37 6	334.85 (11/2 ⁺)		(M1)			
		1506.1 13	52 13	312.34 (11/2 ⁻)					
		1560.3 ^e 6	<44 ^e	257.99 (9/2 ⁺)					
		1611.3 6	29 7	207.41 (7/2 ⁺)		(M1)			
		1631.4 6	39 22	185.73 9/2 ⁽⁻⁾					
		1736.7 4	100 13	81.40 7/2 ⁽⁻⁾		(E1)			
1825.71	(7/2 ⁺)	619.4 ^e 4	<42 ^e	1205.81 (9/2 ⁻)					
		701.0 7	15 9	1124.1 (7/2,9/2)					
		1618.2 6	97 12	207.41 (7/2 ⁺)		(M1)			
		1744.8 5	100 12	81.40 7/2 ⁽⁻⁾		(E1)			
		1826.1 4	91 15	0.0 5/2 ⁽⁻⁾		(E1)			
1837.0	(27/2 ⁺)	514.1 [@]	100 [@]	1322.9 (23/2 ⁺)					
1887.8		1680.2 5	63 16	207.41 (7/2 ⁺)					
		1887.9 4	100 18	0.0 5/2 ⁽⁻⁾					
1893.88	(9/2 ⁺)	1095.7 11	13 3	797.43 (11/2 ⁺)		(M1)			
		1249.8 5	100 25	643.94 (9/2 ⁺)					
		1560.3 ^e 6	<18 ^e	334.85 (11/2 ⁺)					
		1581.2 8	<12	312.34 (11/2 ⁻)					
		1636.0 4	70 10	257.99 (9/2 ⁺)		(M1)			
		1686.4 4	4.8 25	207.41 (7/2 ⁺)					
		1707.7 12	20 5	185.73 9/2 ⁽⁻⁾					
		1811.8 6	16 4	81.40 7/2 ⁽⁻⁾					
1904.4	(25/2 ⁻)	138.12 ^{&} 17	100	1766.30 (23/2 ⁻)		(M1+E2)		1.3 3	
1954.1	(25/2 ⁺)	218.6 [@]	100 [@] 6	1735.6 (23/2 ⁺)		(M1+E2)	+0.36 [#] 6	0.426	
		408.6 [@]	<64 [@]	1545.61 (21/2 ⁺)					
2000.0	(23/2 ⁻)	521.3	100	1478.3 (19/2 ⁻)					E_γ : Average of $^{174}\text{Yb}(\alpha,3n\gamma)$ and $^{170}\text{Er}(^9\text{Be},4n\gamma)$.
2033.3	(27/2 ⁻)	535.7 [@]	100 [@]	1497.5 (23/2 ⁻)					
2047.1	(29/2 ⁺)	523.7 ^{&} 1	100	1523.4 (25/2 ⁺)		(E2) ^{&}			
2081.8	(25/2 ⁻)	534.4	100	1547.4 (21/2 ⁻)					E_γ : Average of $^{174}\text{Yb}(\alpha,3n\gamma)$ and $^{170}\text{Er}(^9\text{Be},4n\gamma)$.
2114.2	(27/2 ⁻)	209.74 ^a 14	100 ^a 3	1904.4 (25/2 ⁻)					
		347.86 ^a 19	6 ^a 1	1766.30 (23/2 ⁻)					
2195.7	(27/2 ⁺)	241.7 [@]	100 [@] 12	1954.1 (25/2 ⁺)		(M1+E2)	+0.39 [#] +10 -8	0.319	
		460.0 [@]	≤ 23 [@]	1735.6 (23/2 ⁺)					
2322.4	(29/2 ⁻)	565.1 ^a 3	100 ^a	1757.3 (25/2 ⁻)		(E2)		0.0145	
2360.1	(29/2 ⁻)	245.89 ^a 14	100.0 ^a 21	2114.2 (27/2 ⁻)					
		455.64 ^a 14	14.7 ^a 8	1904.4 (25/2 ⁻)					

Adopted Levels, Gammas (continued)

$\gamma(^{175}\text{Hf})$ (continued)									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	$\delta^\ddagger$	α^C	Comments
2432.5	(31/2 ⁺)	595.5@	100@	1837.0	(27/2 ⁺)				
2458.7	(29/2 ⁺)	263.2@	100@ 6	2195.7	(27/2 ⁺)	(M1+E2)	+0.30 [#] +11 -8	0.260	
		504.6@	31@ 10	1954.1	(25/2 ⁺)				
2580.2	(27/2 ⁻)	579.8@	100@	2000.0	(23/2 ⁻)				
2627.6	(31/2 ⁻)	594.24 ^a 17	100 ^a 33	2033.3	(27/2 ⁻)				
2634.3	(31/2 ⁻)	274.22 ^a 16	100.0 ^a 19	2360.1	(29/2 ⁻)				
		312.0 ^a 22	0.8 ^a 3	2322.4	(29/2 ⁻)				
		520.11 ^a 3	31.6 ^a 12	2114.2	(27/2 ⁻)				
		600.7 ^a 17	0.8 ^a 2	2033.3	(27/2 ⁻)				
2639.6	(33/2 ⁺)	592.5& 1	100	2047.1	(29/2 ⁺)	(E2)&			
2677.8	(29/2 ⁻)	596.0	100	2081.8	(25/2 ⁻)				E_γ : From $^{170}\text{Er}(^9\text{Be},4n\gamma)$.
2742.0	(31/2 ⁺)	283.3@	29@ 3	2458.7	(29/2 ⁺)	(M1+E2) [#]		0.16 6	
		546.1@	<100@	2195.7	(27/2 ⁺)				
2932.9	(33/2 ⁻)	298.58 ^a 16	100 ^a 3	2634.3	(31/2 ⁻)				
		572.8 ^a 3	39 ^a 1	2360.1	(29/2 ⁻)				
		610.6 ^a 15	0.8 ^a 2	2322.4	(29/2 ⁻)				
2941.2	(33/2 ⁻)	618.8 ^a 4	100 ^a 45	2322.4	(29/2 ⁻)				
3015.6	(35/2 ⁻)	74.5 ^a 8	0.3 ^a 2	2941.2	(33/2 ⁻)				
		82.7 ^a 4	58 ^a 3	2932.9	(33/2 ⁻)				
		381.3 ^a 4	100 ^a 6	2634.3	(31/2 ⁻)				
3044.4	(33/2 ⁺)	302.2 ^d		2742.0	(31/2 ⁺)				E_γ : From $^{170}\text{Er}(^9\text{Be},4n\gamma)$.
		585.9		2458.7	(29/2 ⁺)				E_γ : From $^{170}\text{Er}(^9\text{Be},4n\gamma)$.
3101.5	(35/2 ⁺)	669&	100	2432.5	(31/2 ⁺)				
3200.7	(31/2 ⁻)	620&	100	2580.2	(27/2 ⁻)				
3253.8	(35/2 ⁻)	321&		2932.9	(33/2 ⁻)				
		620&		2634.3	(31/2 ⁻)				
3293.6	(37/2 ⁺)	654.0& 1	100	2639.6	(33/2 ⁺)	(E2)&			
3305.7	(37/2 ⁻)	290.1@	100@	3015.6	(35/2 ⁻)	(M1+E2) [#]		0.15 6	
3325.8	(33/2 ⁻)	648&	100	2677.8	(29/2 ⁻)				
3593.8	(37/2 ⁻)	340&		3253.8	(35/2 ⁻)				
		661		2932.9	(33/2 ⁻)				
3629.7	(39/2 ⁻)	324.0@	100@ 7	3305.7	(37/2 ⁻)	(M1+E2)		0.11 5	
		613.6@g	<39@	3015.6	(35/2 ⁻)				
3819.6	(39/2 ⁺)	190&		3629.7	(39/2 ⁻)				
		514&		3305.7	(37/2 ⁻)				

Adopted Levels, Gammas (continued)

							$\gamma(^{175}\text{Hf})$ (continued)		
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]		Comments	
3819.6	(39/2 ⁺)	804&		3015.6	(35/2 ⁻)				
3835.5	(39/2 ⁺)	734&	100	3101.5	(35/2 ⁺)				
3856.1	(35/2 ⁻)	603&		3253.8	(35/2 ⁻)				
		655&		3200.7	(31/2 ⁻)				
		923&		2932.9	(33/2 ⁻)				
3951.8	(39/2 ⁻)	358&		3593.8	(37/2 ⁻)				
		698&		3253.8	(35/2 ⁻)				
3977.9	(41/2 ⁻)	348.3 ^d		3629.7	(39/2 ⁻)			E _γ : From ¹⁷⁰ Er(⁹ Be,4nγ).	
		672&		3305.7	(37/2 ⁻)				
4001.1	(41/2 ⁺)	707.4&	2	3293.6	(37/2 ⁺)	(E2)&			
4019	(37/2 ⁻)	693&	100	3325.8	(33/2 ⁻)				
4155.8	(35/2 ⁻)	431&	7	3725	(31/2 ⁻)	(E2)&			
4157.4	(41/2 ⁺)	338&	100	3819.6	(39/2 ⁺)				
4344.9	(43/2 ⁻)	367&		3977.9	(41/2 ⁻)				
		715&		3629.7	(39/2 ⁻)				
4486.9	(39/2 ⁻)	630.8&	7	3856.1	(35/2 ⁻)	(E2)&			
		893&		3593.8	(37/2 ⁻)				
		1193.6&	7	3293.6	(37/2 ⁺)	(E1)&			
4505.4	(43/2 ⁺)	348&		4157.4	(41/2 ⁺)				
		686&		3819.6	(39/2 ⁺)				
4625.5	(43/2 ⁺)	790&	100	3835.5	(39/2 ⁺)				
4636.2	(45/2 ⁺)	131&		4505.4	(43/2 ⁺)				
		291&		4344.9	(43/2 ⁻)				
		479&		4157.4	(41/2 ⁺)				
4645.3	(39/2 ⁻)	489.5&	5	4157.4	(41/2 ⁺)	(E2)&			
4727.9	(45/2 ⁻)	383&		4344.9	(43/2 ⁻)				
		750&		3977.9	(41/2 ⁻)				
4748	(41/2 ⁻)	729&	100	4019	(37/2 ⁻)				
4756.1	(45/2 ⁺)	755&	100	4001.1	(41/2 ⁺)				
5123.9	(47/2 ⁻)	396&		4727.9	(45/2 ⁻)				
		779&		4344.9	(43/2 ⁻)				
5171.3	(43/2 ⁻)	684.7&	7	4486.9	(39/2 ⁻)	(E2)&		I _γ : From (⁴⁸ Ca,3nγ).	

Adopted Levels, Gammas (continued)

$\gamma(^{175}\text{Hf})$ (continued)							Comments
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. ‡	
5171.3	(43/2 ⁻)	1169.9 & 7	36 1	4001.1 (41/2 ⁺)	(E1) &		I_γ : From ($^{48}\text{Ca}, 3n\gamma$).
5194.2	(43/2 ⁻)	548.9 & 4	20 3	4645.3 (39/2 ⁻)	(E2) &		I_γ : From ($^{48}\text{Ca}, 3n\gamma$).
		707.3 & 7	100 3	4486.9 (39/2 ⁻)	(E2) &		I_γ : From ($^{48}\text{Ca}, 3n\gamma$).
5458	(47/2 ⁺)	833 &		4625.5 (43/2 ⁺)			
5517	(45/2 ⁻)	769 &		4748 (41/2 ⁻)			
5531.9	(49/2 ⁻)	408 &		5123.9 (47/2 ⁻)			
		804 &		4727.9 (45/2 ⁻)			
5556.1	(49/2 ⁺)	800 &	100	4756.1 (45/2 ⁺)			
5786.0	(47/2 ⁻)	591.8 & 4	30 3	5194.2 (43/2 ⁻)	(E2) &		I_γ : From ($^{48}\text{Ca}, 3n\gamma$).
		614.8 & 7	100 3	5171.3 (43/2 ⁻)	(E2) &		I_γ : From ($^{48}\text{Ca}, 3n\gamma$).
5949.0	(51/2 ⁻)	417 &		5531.9 (49/2 ⁻)			
		825 &		5123.9 (47/2 ⁻)			
6315	(51/2 ⁺)	857 &	100	5458 (47/2 ⁺)			
6330	(49/2 ⁻)	813 &	100	5517 (45/2 ⁻)			
6371.7	(53/2 ⁻)	423 &		5949.0 (51/2 ⁻)			
		840 &		5531.9 (49/2 ⁻)			
6403.1	(53/2 ⁺)	847 &	100	5556.1 (49/2 ⁺)			
6444.2	(51/2 ⁻)	658.1 & 5	100	5786.0 (47/2 ⁻)	(E2) &		
6510.1	(53/2 ⁺)	561 &		5949.0 (51/2 ⁻)			
6794.3	(55/2 ⁻)	423 &		6371.7 (53/2 ⁻)			
		845 &		5949.0 (51/2 ⁻)			
7161.1	(55/2 ⁻)	716.9 & 8	100	6444.2 (51/2 ⁻)	(E2) &		
7181	(55/2 ⁺)	866 &	100	6315 (51/2 ⁺)			
7191	(53/2 ⁻)	861 &	100	6330 (49/2 ⁻)			
7300.1	(57/2 ⁺)	897 &	100	6403.1 (53/2 ⁺)			
7455.2	(57/2 ⁻)	661 &		6794.3 (55/2 ⁻)			
		945 &		6510.1 (53/2 ⁺)			
7936.9	(59/2 ⁻)	775.8 & 4	100	7161.1 (55/2 ⁻)	(E2) &		
8052	(59/2 ⁺)	871 &	100	7181 (55/2 ⁺)			
8087	(57/2 ⁻)	896 &	100	7191 (53/2 ⁻)			
8249.1	(61/2 ⁺)	949 &	100	7300.1 (57/2 ⁺)			
8773.0	(63/2 ⁻)	836.1 & 9	100	7936.9 (59/2 ⁻)	(E2) &		
8946	(63/2 ⁺)	894 &	100	8052 (59/2 ⁺)			

Adopted Levels, Gammas (continued)

$\gamma(^{175}\text{Hf})$ (continued)							
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	Comments
9246	(65/2 ⁺)	997 ^{&}	100	8249.1	(61/2 ⁺)		
9668.3	(67/2 ⁻)	895.3 ^{& 5}	100	8773.0	(63/2 ⁻)	(E2) ^{&}	
9890	(67/2 ⁺)	944 ^{&}	100	8946	(63/2 ⁺)		
10279	(69/2 ⁺)	1033 ^{&}	100	9246	(65/2 ⁺)		
10621.6	(71/2 ⁻)	953.3 ^{& 6}	100	9668.3	(67/2 ⁻)	(E2) ^{&}	
10893	(71/2 ⁺)	1003 ^{&}	100	9890	(67/2 ⁺)		
11629.5	(75/2 ⁻)	1007.9 ^{& 4}	100	10621.6	(71/2 ⁻)	(E2) ^{&}	
11958	(75/2 ⁺)	1065 ^{&}	100	10893	(71/2 ⁺)		
12680.4	(79/2 ⁻)	1050.8 ^{& 9}	100	11629.5	(75/2 ⁻)	(E2) ^{&}	
12687.3	(79/2 ⁻)	1057.9 ^{& 6}	100	11629.5	(75/2 ⁻)	(E2) ^{&}	
13091	(79/2 ⁺)	1133 ^{&}	100	11958	(75/2 ⁺)		
13499.3	(83/2 ⁻)	812.1 ^{& 7}	90 ¹⁴	12687.3	(79/2 ⁻)	(E2) ^{&}	I_γ : From (⁴⁸ Ca,3n γ).
		818.8 ^{& 9}	100 ¹⁹	12680.4	(79/2 ⁻)	(E2) ^{&}	I_γ : From (⁴⁸ Ca,3n γ).
13746.4	(83/2 ⁻)	1066 ^{&}	100	12680.4	(79/2 ⁻)		
14362.3	(87/2 ⁻)	863 ^{&}	100	13499.3	(83/2 ⁻)		
15277.0	(91/2 ⁻)	914.6 ^{& 6}	100	14362.3	(87/2 ⁻)	(E2) ^{&}	
16245.5	(95/2 ⁻)	968.5 ^{& 9}	100	15277.0	(91/2 ⁻)	(E2) ^{&}	
17270	(99/2 ⁻)	1024.7 ^{& 21}	100	16245.5	(95/2 ⁻)	(E2) ^{&}	
18354	(103/2 ⁻)	1083.7 ^{& 9}	100	17270	(99/2 ⁻)	(E2) ^{&}	
19498	(107/2 ⁻)	1144 ^{&}	100	18354	(103/2 ⁻)	(E2) ^{&}	
20705	(111/2 ⁻)	1207 ^{&}	100	19498	(107/2 ⁻)	(E2) ^{&}	
21977	(115/2 ⁻)	1272 ^{&}	100	20705	(111/2 ⁻)	(E2) ^{&}	
23313	(119/2 ⁻)	1336 ^{&}	100	21977	(115/2 ⁻)	(E2) ^{&}	
24714	(123/2 ⁻)	1401 ^{&}	100	23313	(119/2 ⁻)	(E2) ^{&}	
26178.4	(127/2 ⁻)	1466 ^{&g}	100	24714	(123/2 ⁻)		

[†] From ¹⁷⁵Ta ε decay, except as noted.

[‡] From ¹⁷⁵Ta ε decay, except as noted.

[#] From ¹⁷⁰Er(⁹Be,4n γ). D+Q assigned from $\gamma(\theta)$.

[@] From ¹⁷⁰Er(⁹Be,4n γ).

[&] From ¹³⁰Te(⁴⁸Ca,3n γ).

^a From ¹³⁰Te(⁴⁸Ca,3n γ), I_γ deduced from $I(\gamma+ce)$.

^b From ¹⁷⁴Hf(n, γ).

Adopted Levels, Gammas (continued) $\gamma(^{175}\text{Hf})$ (continued)

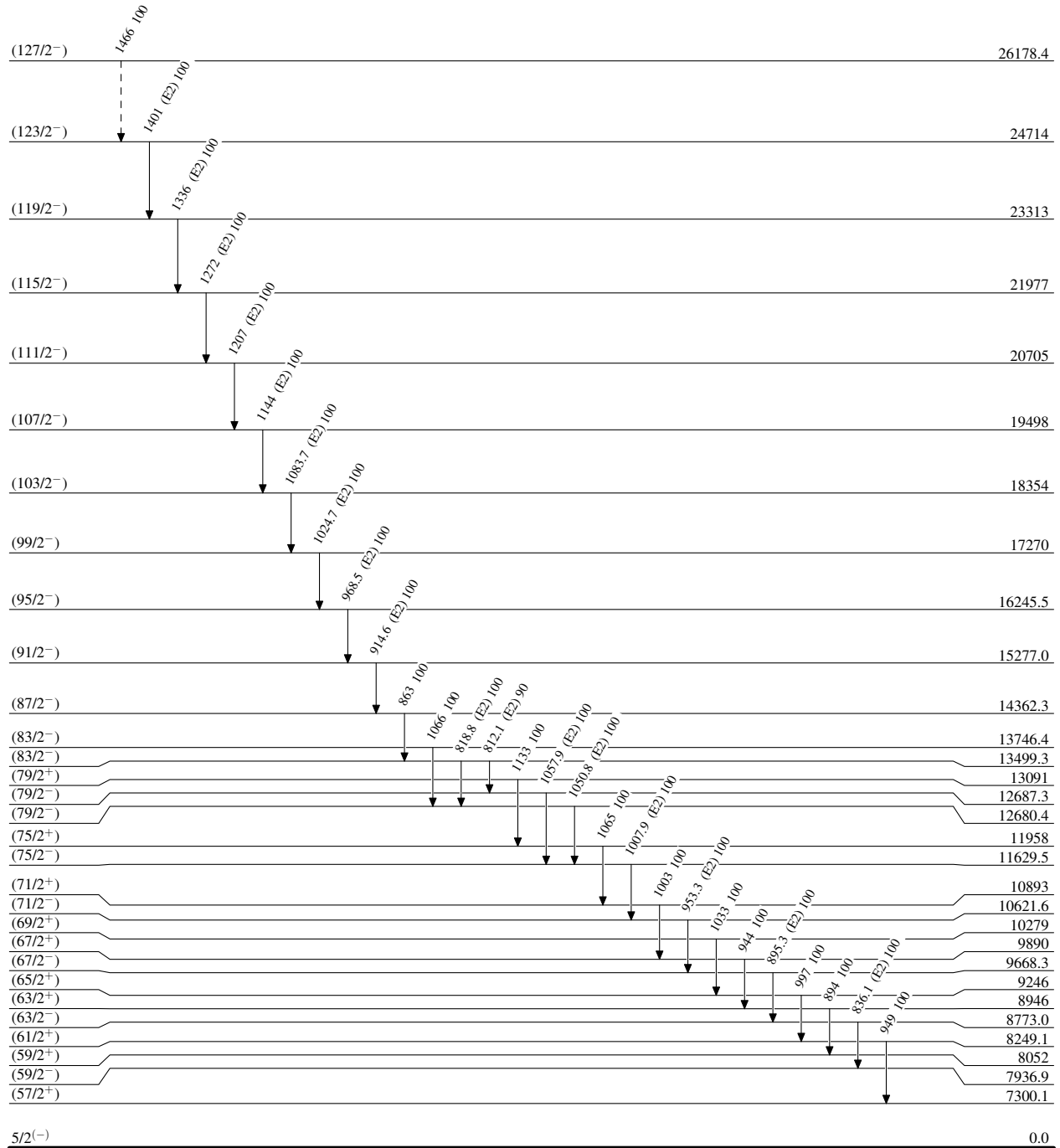
- ^c Total theoretical internal conversion coefficients, calculated using the BrIcc code ([2008Ki07](#)) with Frozen orbital approximation based on γ -ray energies, assigned multiplicities, and mixing ratios, unless otherwise specified.
- ^d Multiply placed.
- ^e Multiply placed with undivided intensity.
- ^f Multiply placed with intensity suitably divided.
- ^g Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

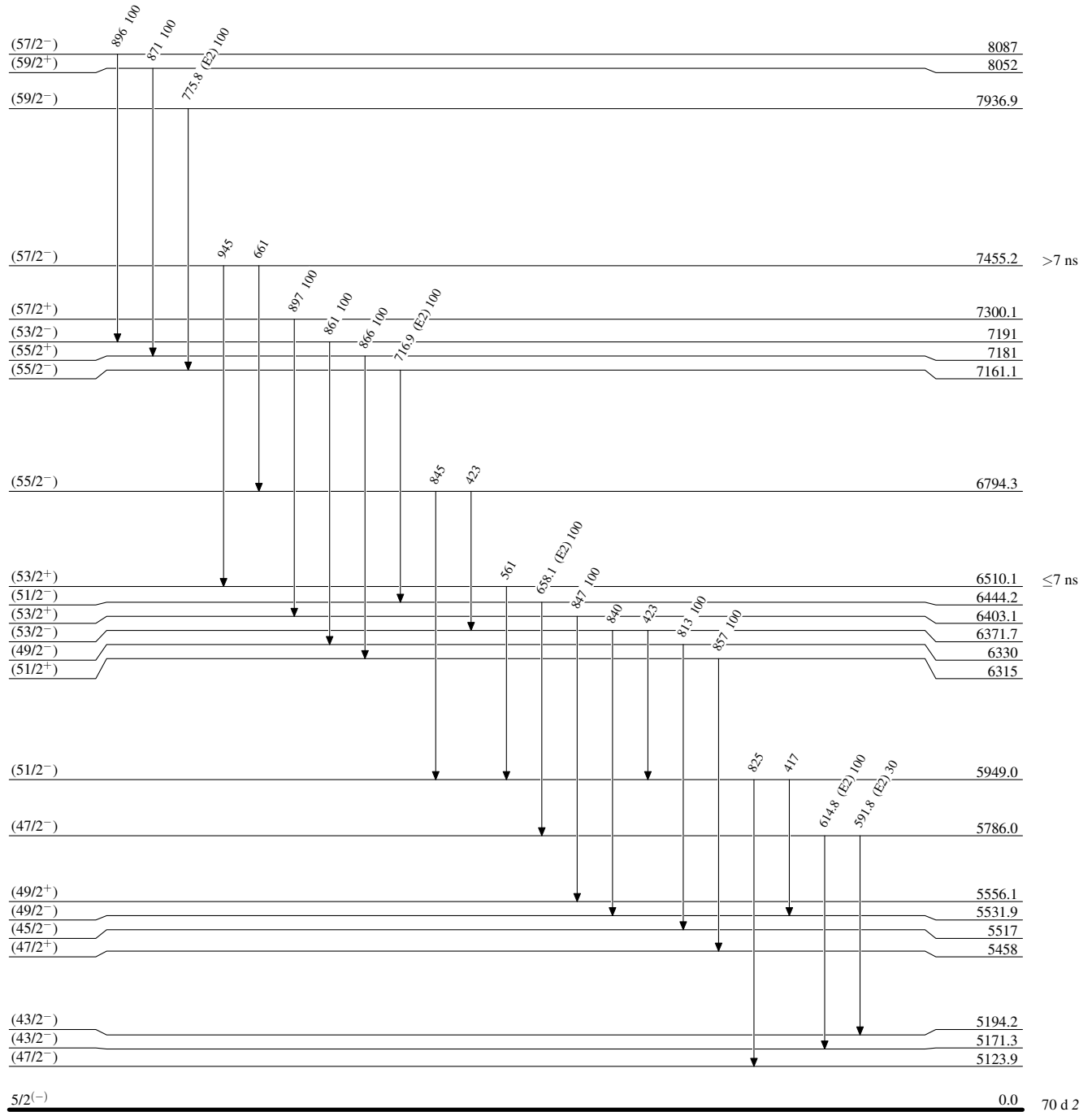
Level Scheme

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)

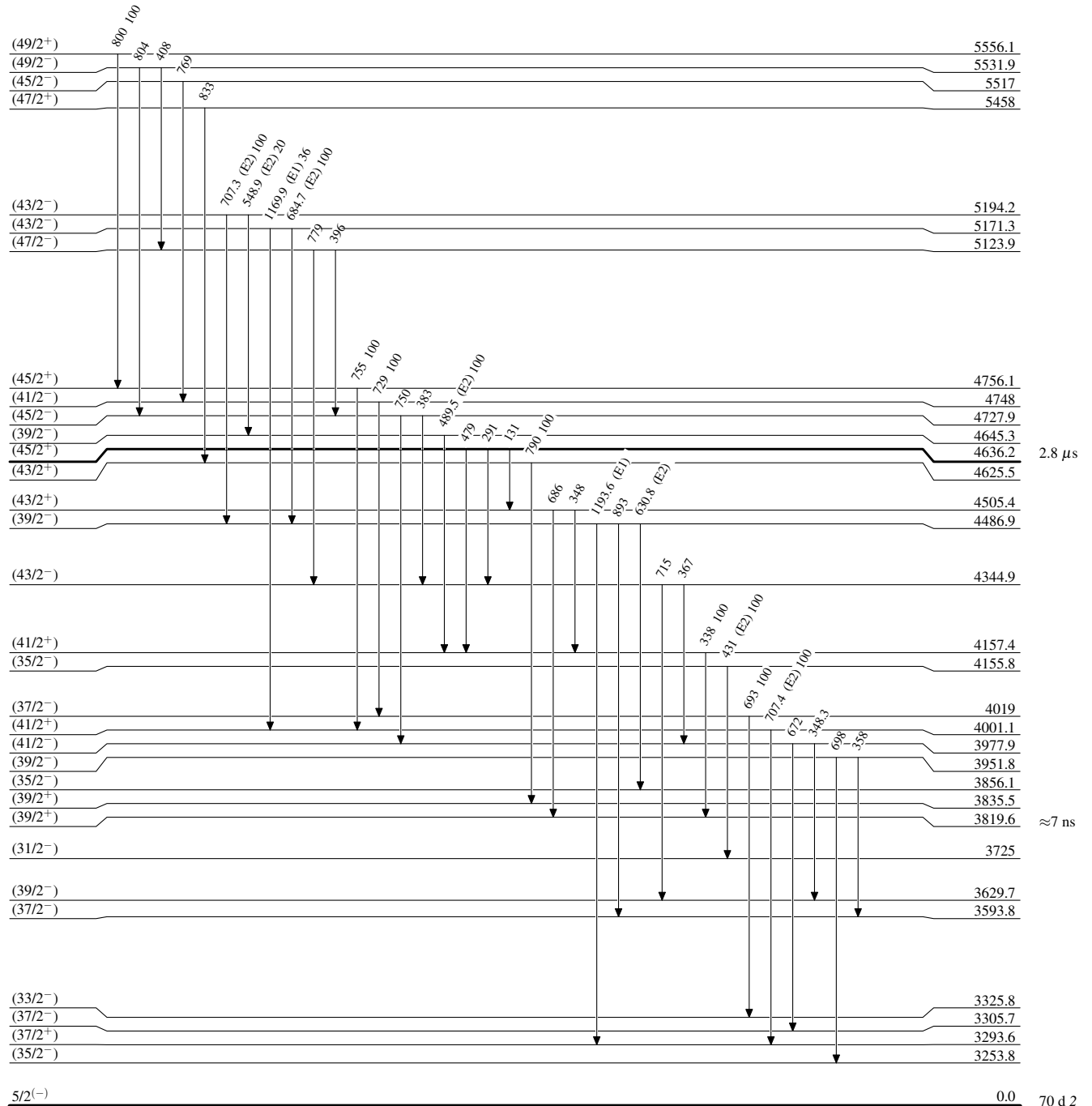
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



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

Intensities: Relative photon branching from each level

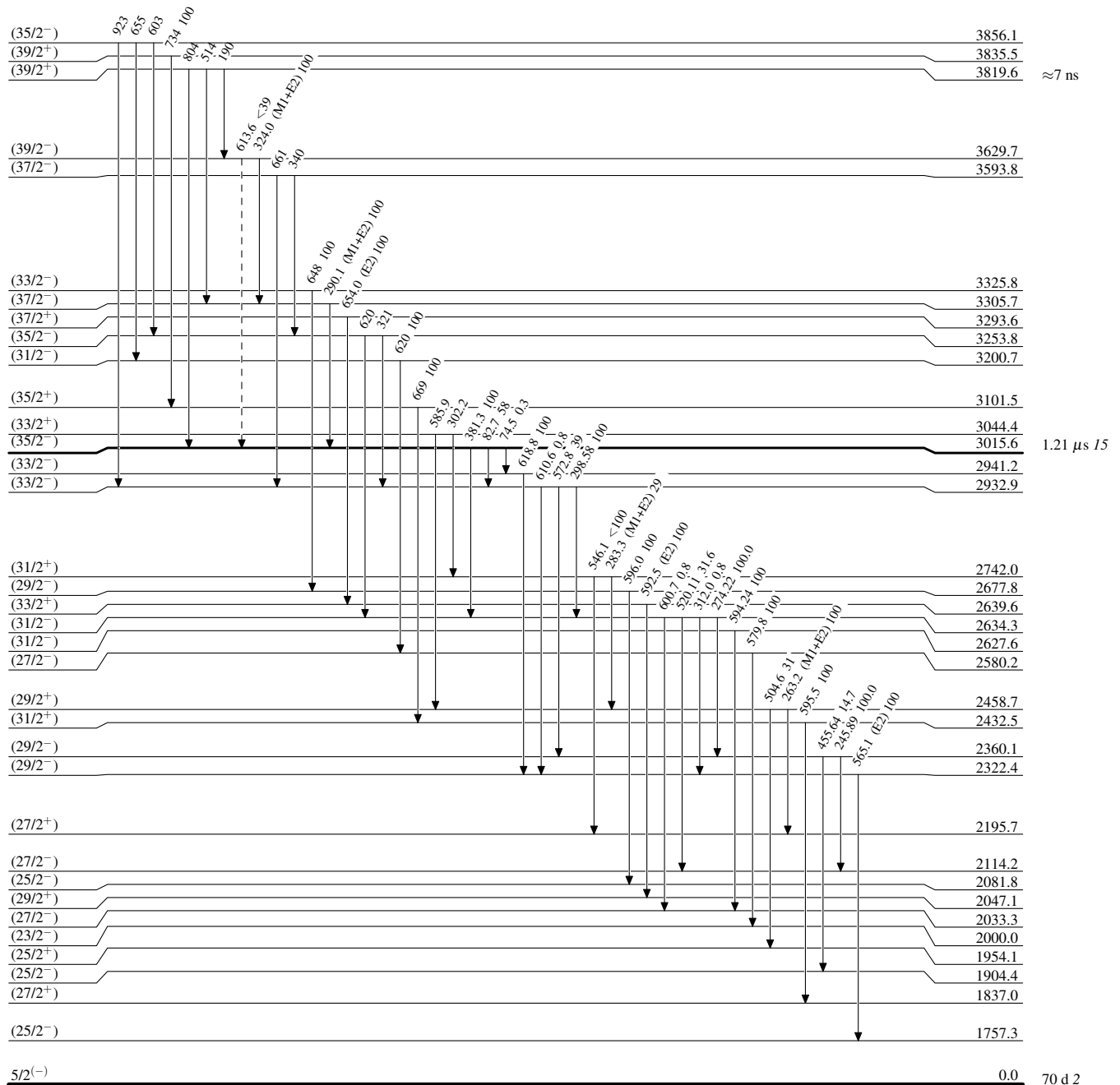


Adopted Levels, Gammas

Legend

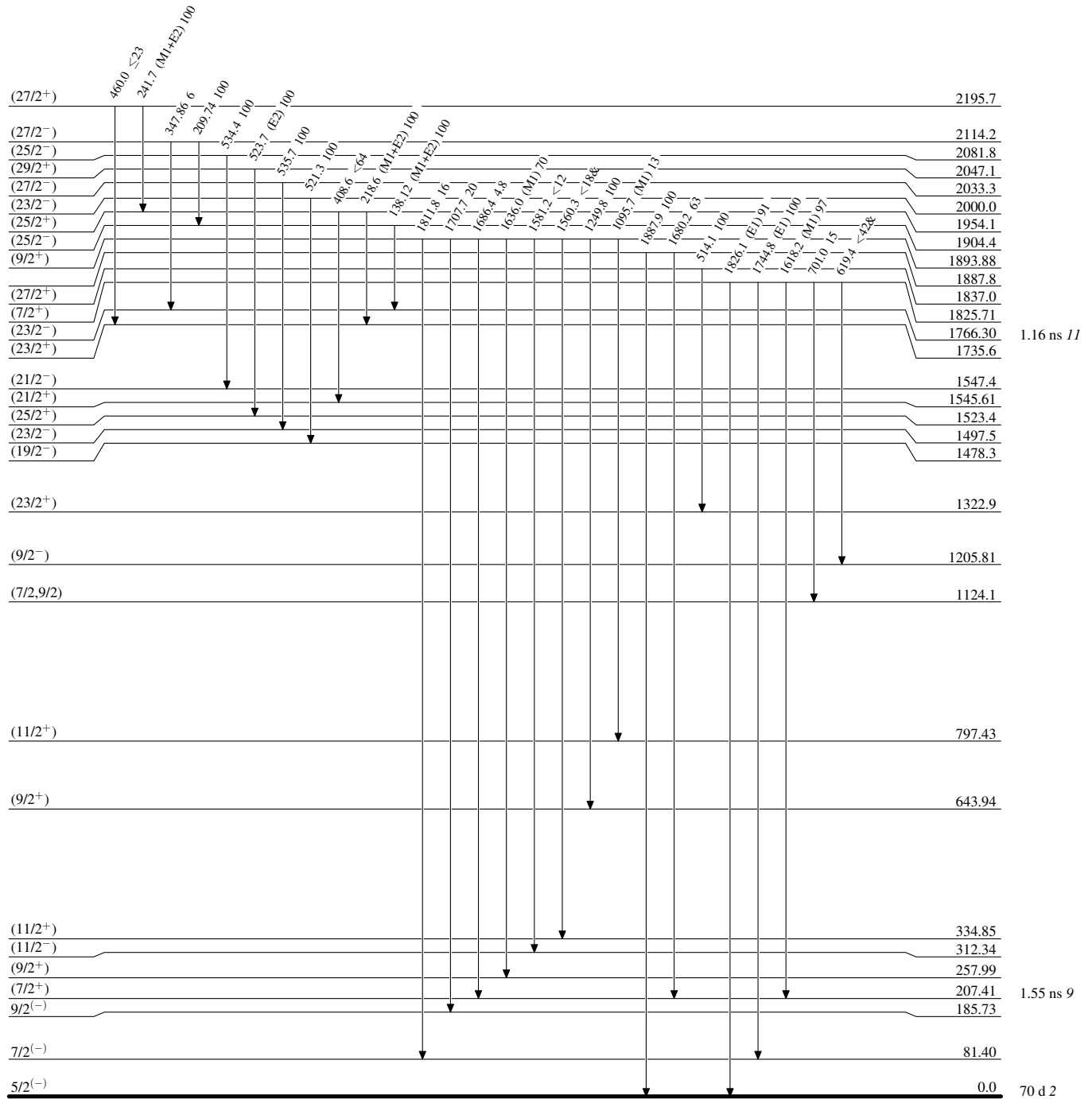
Level Scheme (continued)

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)


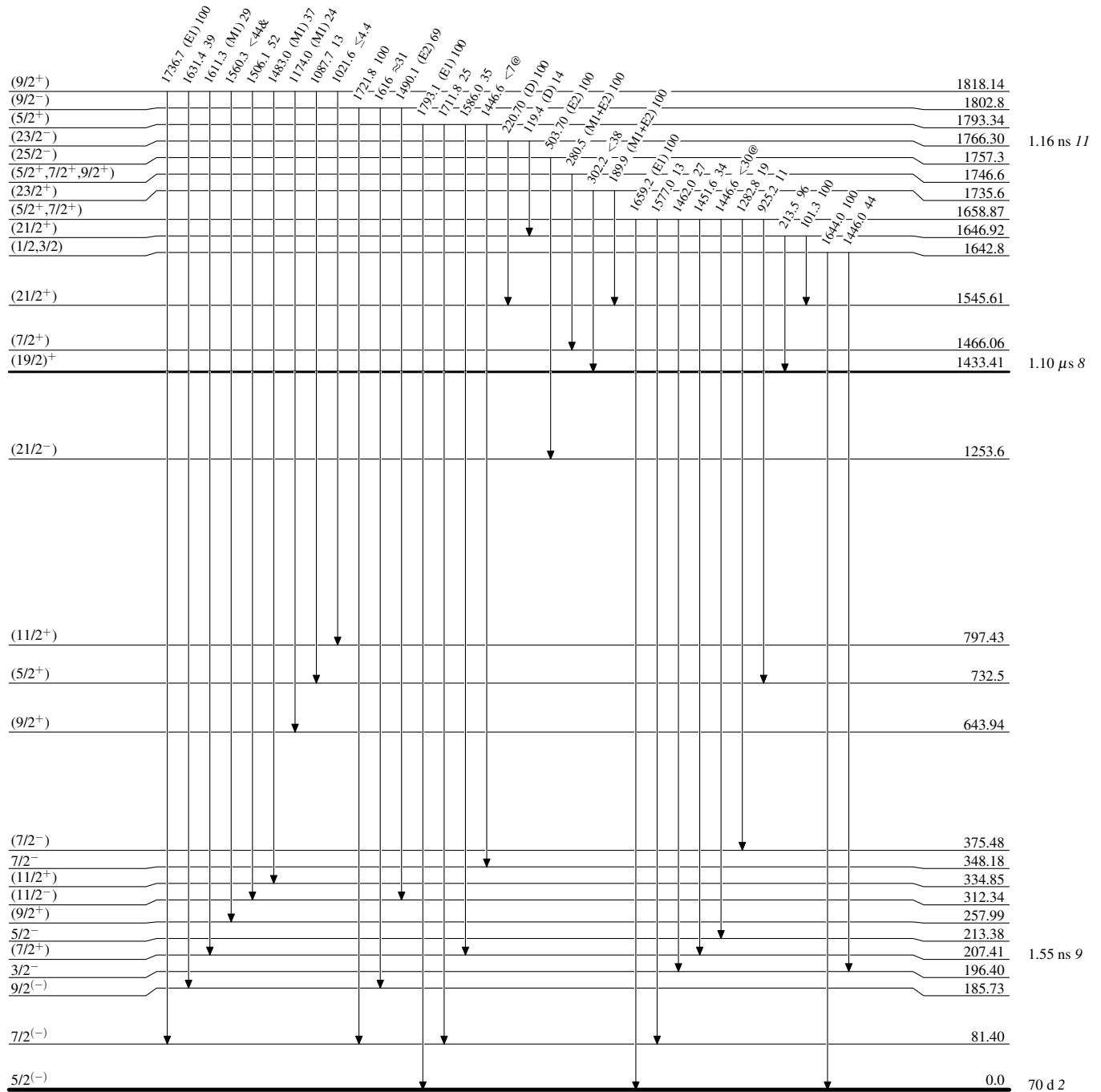
Adopted Levels, Gammas**Level Scheme (continued)**

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



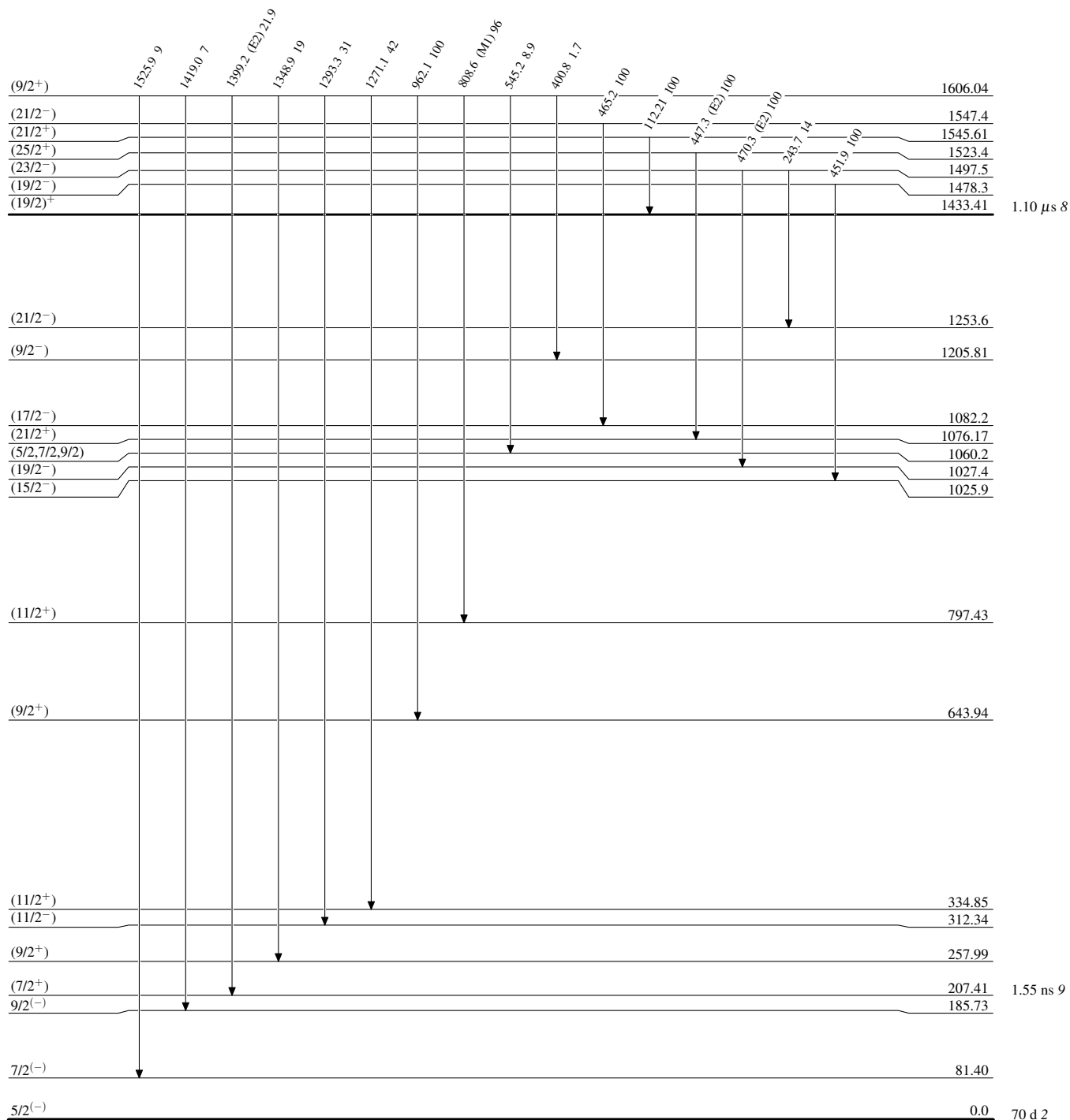
Adopted Levels, GammasLevel Scheme (continued)

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



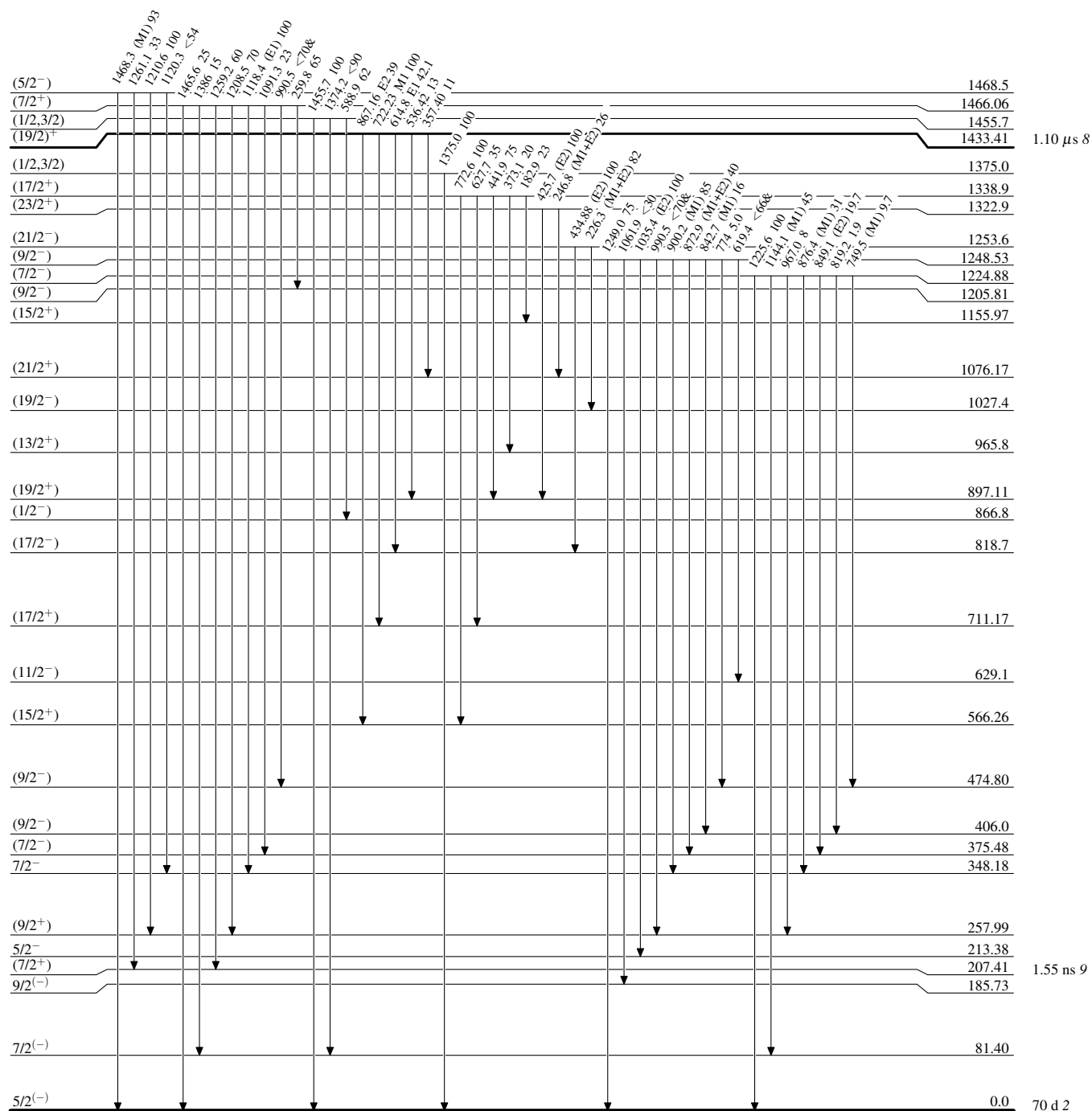
Adopted Levels, Gammas**Level Scheme (continued)**

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



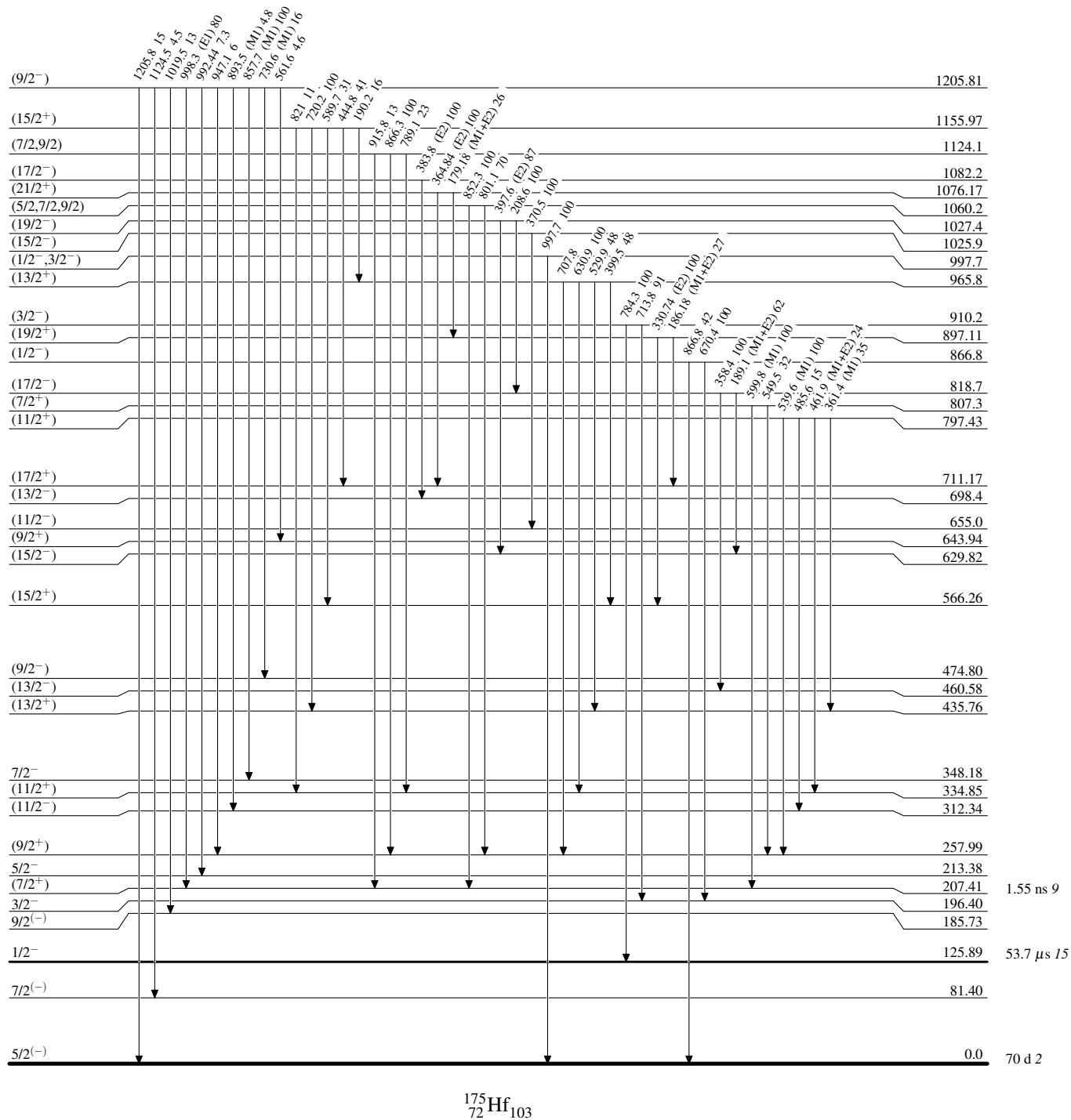
Adopted Levels, Gammas**Level Scheme (continued)**

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



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

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



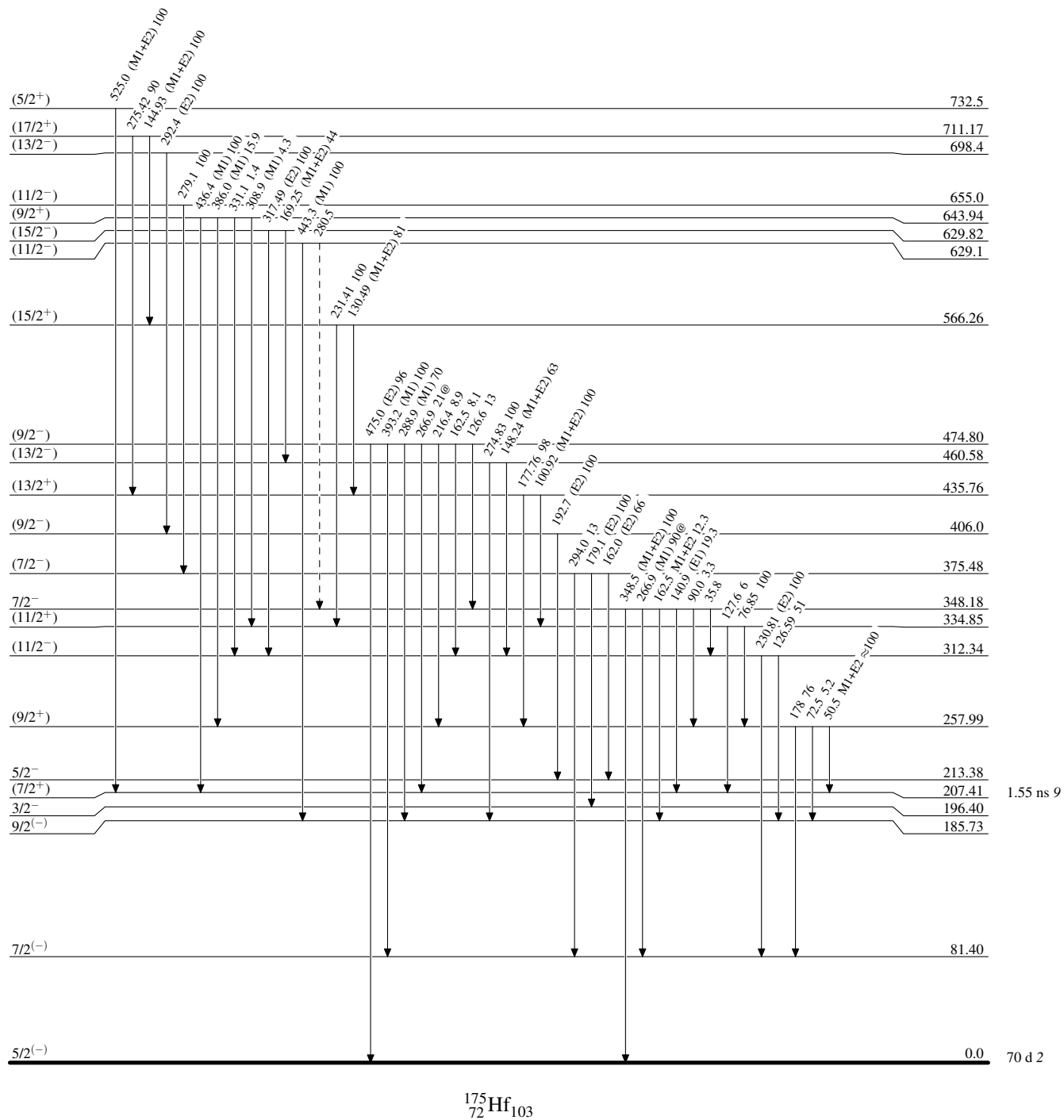
Adopted Levels, Gammas

Level Scheme (continued)

Legend

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

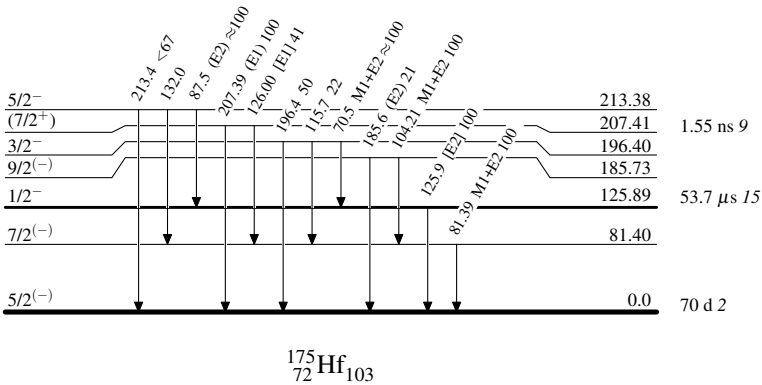
-----► γ Decay (Uncertain)

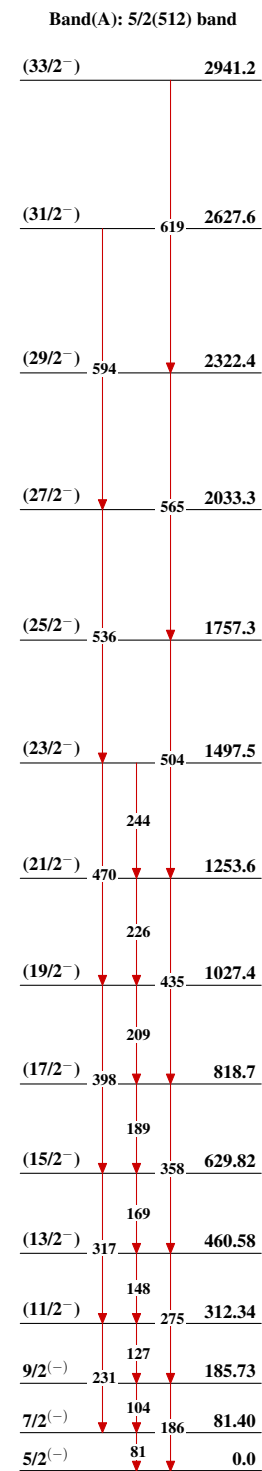


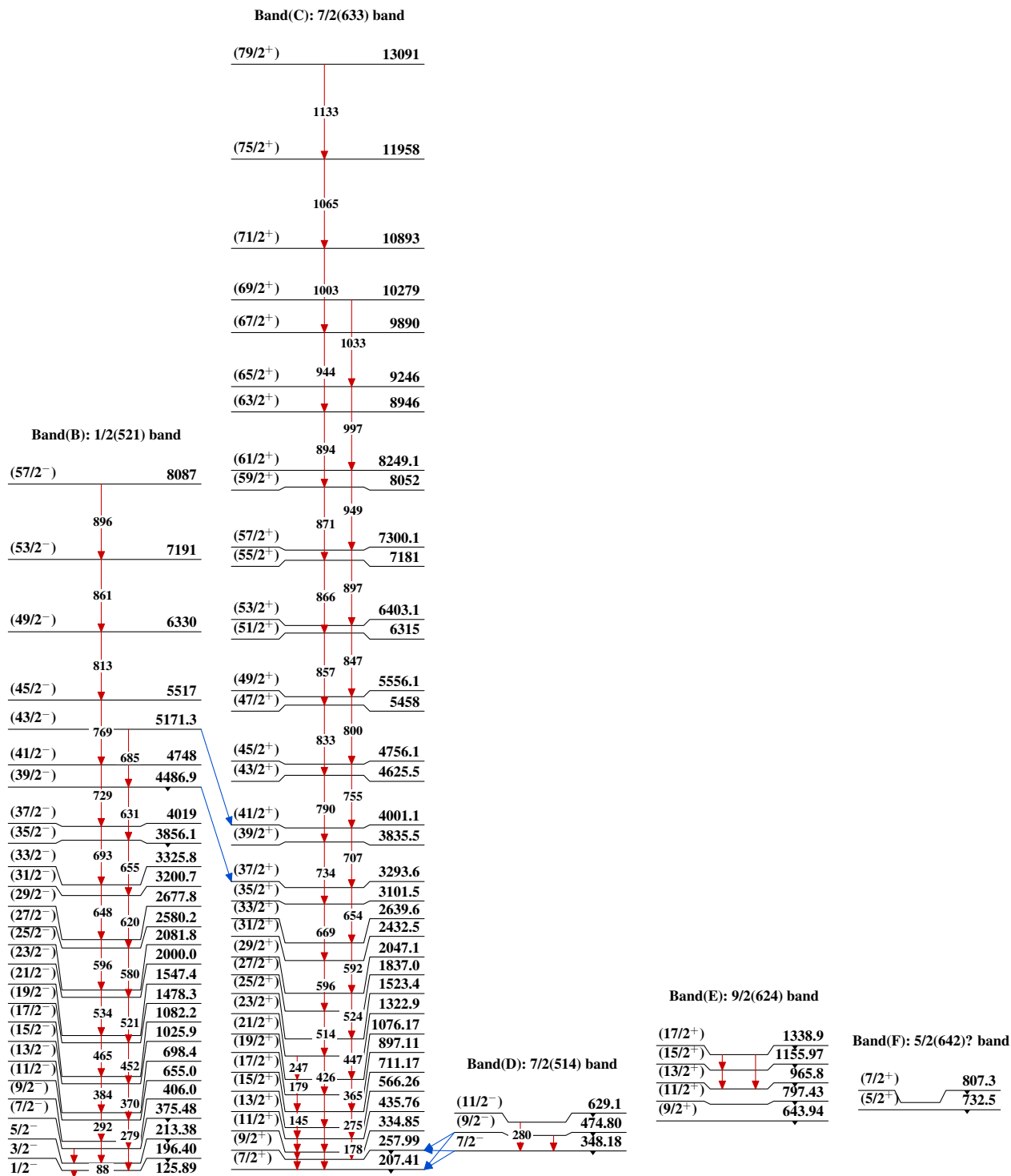
Adopted Levels, Gammas

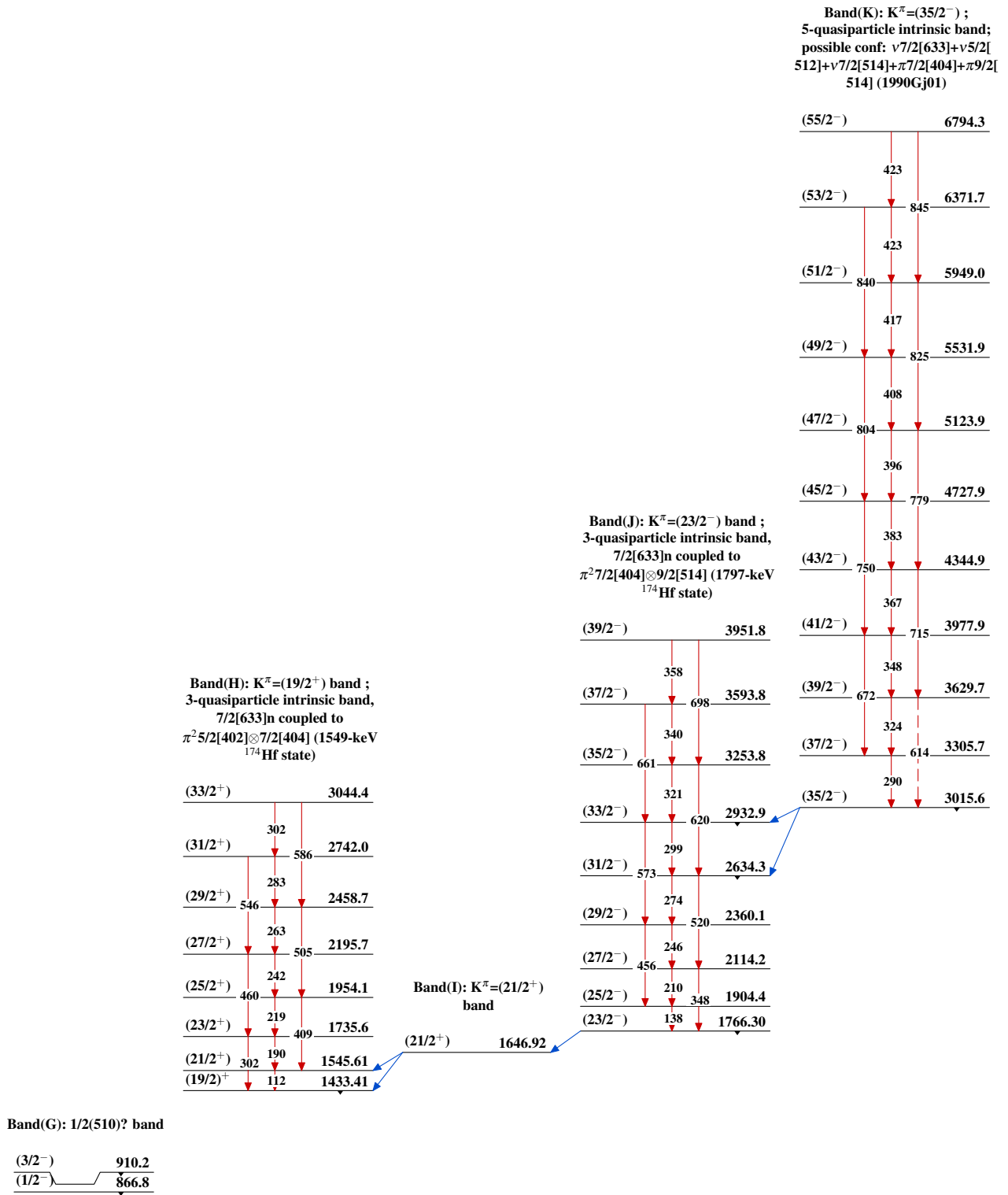
Level Scheme (continued)

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



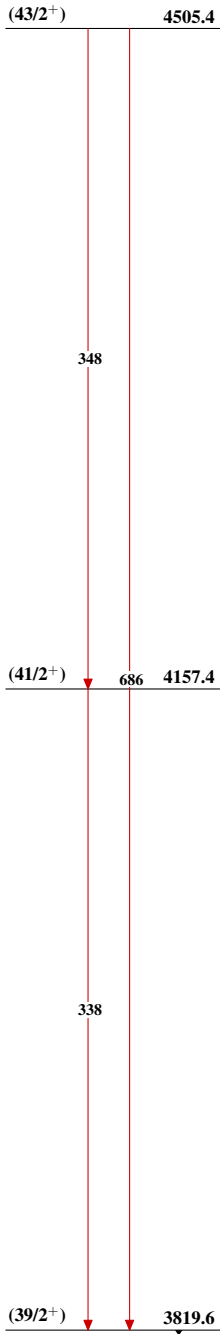
Adopted Levels, Gammas $^{175}_{72}\text{Hf}_{103}$

Adopted Levels, Gammas (continued)

Adopted Levels, Gammas (continued)

Adopted Levels, Gammas (continued)

Band(L): K^π=(39/2⁺) ;
5-quasiparticle
intrinsic band; possible
conf: ν7/2[633]+ν9/2[
624]+ν7/2[514]+π7/2[
404]+π9/2[514]
(1990Gj01)



¹⁷⁵₇₂Hf₁₀₃