

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 159, 1 (2019)	30-Aug-2019

$Q(\beta^-) = -2013$ 28; $S(n) = 8420$ 30; $S(p) = 4427$ 3; $Q(\alpha) = 2741$ 3 [2017Wa10](#)

[Additional information 1.](#)

 ^{177}Ta LevelsCross Reference (XREF) Flags

A	^{177}W ε decay	D	$^{11}\text{B}(^{208}\text{Pb}, X\gamma)$
B	$^{170}\text{Er}(^{11}\text{B}, 4n\gamma)$	E	$^{176}\text{Hf}(\alpha, t)$
C	$^{175}\text{Lu}(\alpha, 2n\gamma)$	F	$^{176}\text{Hf}(^3\text{He}, d)$

E(level) [†]	J ^π [‡]	T _{1/2}	XREF	Comments
0.0 [#]	7/2 ⁺	56.36 h 13	ABC EF	$\% \varepsilon + \% \beta^+ = 100$. $\mu = 2.25$ 5 J^π : J=7/2 atomic beam (1978Ru04). $\pi = +$ from $L(^3\text{He}, d) = 4$ and μ . $T_{1/2}$: Unweighted average of 56.56 h 6 (1961We11), 56.4 h 10 (1964Sa16), 56 h 1 (1963Ra14) and 56.5 h 4 (1981Ha40). Other: 53 h 2 (1950Wi67). μ : From 1981Ha40, 1984Oh07, 2014StZZ using the nuclear magnetic resonance on oriented nuclei technique. configuration: $\pi 7/2[404]$ ($g_{7/2}$) Nilsson configuration.
70.48 ^a 5	5/2 ⁺	70.2 ns 19	ABC EF	$\mu = +4.7$ 5 J^π : 70.45 γ M1+E2 to 7/2 ⁺ ; $L(^3\text{He}, d) = 2$; measured μ and the proposed Nilsson configuration. $T_{1/2}$: Weighted average of 69.3 ns 21 (2000Da09), 73 ns 5 (1976Ao02), and 80 ns 10 (1973Sc20). Others: 53 ns 3 (1972Ad12) and 72.7 ns 2 (1974Ao01 , superseded by 1976Ao02). μ : From 1974Ao01, 1976Ao02, 2014StZZ deduced using the perturbed polarization-directional angular correlation technique. configuration: $\pi 5/2[402]$ ($d_{5/2}$) Nilsson configuration.
73.16 ^b 7	9/2 ⁻	410 ns 7	ABC	J^π : 73.15 γ E1 to 7/2 ⁺ ; systematics of known structures in the region and the proposed Nilsson configuration. $T_{1/2}$: From $\gamma(t)$ and $\gamma\gamma(t)$ in 2000Da09 . Other: 370 ns 50 from 73.6 $\gamma(t)$ in 1973Sc20 . configuration: $\pi 9/2[514]$ ($h_{11/2}$) Nilsson configuration.
130.98 [#] 19	9/2 ⁺		BC E	J^π : 131.2 γ M1+E2 to 7/2 ⁺ ; band assignment.
172.25 ^a 6	7/2 ⁺		ABC	J^π : 101.75 γ M1+E2 to 5/2 ⁺ ; 172.5 γ E0+M1+E2 to 7/2 ⁺ ; band assignment.
186.16 [@] 6	5/2 ⁻	3.62 μ s 10	ABC EF	$\mu = +2.05$ 13 XREF: E(187)F(185). J^π : 186.2 γ E1 to 7/2 ⁺ ; $L(^3\text{He}, d) = 2$. $T_{1/2}$: Weighted average of 3.67 μ s 14 (2000Da09), 3.6 μ s 2 (1971Hu14), 3.5 μ s 3 (1972Ro05) and 3.5 μ s 4 (1972Ad12). μ : From 1978Be67, 2014StZZ , deduced using the time dependent perturbed angular correlation technique. configuration: $\pi 1/2[541]$ ($h_{9/2}$) strongly Coriolis mixed Nilsson configuration.
216.63 [@] 6	1/2 ⁻	0.72 ns 4	AB ef	XREF: e(220)f(220). J^π : 30.45 γ (E2) to 5/2 ⁻ ; strong direct feeding in ^{177}W ε decay ($J^\pi = 1/2^-$); band assignment. $T_{1/2}$: From 30.4ce(L)- $\gamma(\Delta t)$ in 1972Ad12 .
219.86 ^b 20	11/2 ⁻		BC ef	XREF: e(220)f(220). J^π : 146.6 γ M1+E2 to 9/2 ⁻ ; band assignment.
245.9 [@] 5	9/2 ⁻		BC EF	J^π : 59.7 γ to 5/2 ⁻ ; $L(^3\text{He}, d) = 5$, band assignment.

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Adopted Levels, Gammas (continued)

^{177}Ta Levels (continued)					
E(level) [†]	J ^π [‡]	T _{1/2}	XREF	Comments	
288.48 [#] 19	11/2 ⁺		BC E	XREF: E(286). J ^π : 157.3γ M1+E2 to 9/2 ⁺ , 288.6γ E2 to 7/2 ⁺ ; band assignment.	
300.81 ^a 19	9/2 ⁺		BC	J ^π : 128.6γ M1+E2 to 7/2 ⁺ , 230.1γ E2 to 5/2 ⁺ ; band assignment.	
372.58 ^{&} 6	3/2 ⁻	<0.1 ns	AB EF	XREF: E(372)F(371). J ^π : 155.95γ M1+E2 to 1/2 ⁻ , 186.4γ M1(+E2) to 5/2 ⁻ level; L(³ He,d)=1; band assignment. T _{1/2} : From 1972Ad12. configuration: π 1/2[541] (h _{9/2}) strongly Coriolis mixed Nilsson configuration ($\alpha=-1/2$).	
391.52 ^b 19	13/2 ⁻		BC	J ^π : 171.6γ M1+E2 to 11/2 ⁻ , 318.3γ E2 to 9/2 ⁻ ; band assignment.	
402.4 [@] 6	13/2 ⁻		BC	J ^π : 156.6γ E2 to 9/2 ⁻ ; band assignment.	
454.97 ^a 21	11/2 ⁺		BC	J ^π : 154.0γ M1+E2 to 9/2 ⁺ , 282.8γ E2 to 7/2 ⁺ ; band assignment.	
470.52 [#] 21	13/2 ⁺		BC	J ^π : 182.0γ M1+E2 to 11/2 ⁺ , 339.5γ E2 to 9/2 ⁺ ; band assignment.	
487.63 ^s 6	1/2 ⁺	26 ns 3	A ef	XREF: e(497)f(492). J ^π : 115.05γ E1 to 3/2 ⁻ , 271.02γ E1 to 1/2 ⁻ , 417.16γ E2 to 5/2 ⁺ ; band assignment. T _{1/2} : From Kx-rays-γ(Δt) in 1972Ad12. configuration: π 1/2[411] (d _{3/2}) Nilsson configuration.	
497.42 ^s 6	3/2 ⁺	0.44 ns 2	A ef	XREF: e(497)f(492). J ^π : 280.80γ (E1) to 1/2 ⁻ , 426.98γ M1 to 5/2 ⁺ ; band assignment. T _{1/2} : From 427ce(K)-γ(Δt) in 1972Ad12.	
523 ^{&} 1	(7/2 ⁻)		EF	E(level),J ^π : From ¹⁷⁶ Hf(³ He,d) in 2006Bu19.	
573.14 13	(1/2 ⁺)		A	J ^π : 502.4γ E2 to 5/2 ⁺ , 939.2γ from (1/2 ⁻).	
586.78 ^b 20	15/2 ⁻		BC	J ^π : 195.3γ M1+E2 to 13/2 ⁻ , 367.0γ E2 to 11/2 ⁻ ; band assignment.	
632.93 ^a 22	13/2 ⁺		BC	J ^π : 177.9γ M1+E2 to 11/2 ⁺ , 332.1γ E2 to 9/2 ⁺ ; band assignment.	
639.96 ^s 6	5/2 ⁺		A EF	XREF: E(641)F(640). J ^π : 152.23γ to 1/2 ⁺ , 467.5γ M1 to 7/2 ⁺ ; band assignment.	
659.4 [@] 7	17/2 ⁻		BC	J ^π : 256.7γ E2 to 13/2 ⁻ ; band assignment.	
675.44 [#] 23	15/2 ⁺		BC	J ^π : 204.9γ (M1+E2) to 13/2 ⁺ , 387.0γ E2 to 11/2 ⁺ ; band assignment.	
690.31 ^u 10	(3/2 ⁻)		A EF	J ^π : 317.75γ M1+E2 to 3/2 ⁻ , 473.5γ to 1/2 ⁻ , 504.2γ to 5/2 ⁻ ; assignments in (³ He,d) and (α,t). configuration: π 3/2[532] Nilsson configuration. The assignment is tentative.	
737.4 ^{&} 7	(11/2 ⁻)		B EF	XREF: E(738)F(738). J ^π : 335.0γ to 13/2 ⁻ , 491γ to 9/2 ⁻ ; band assignment.	
804.91 ^b 21	17/2 ⁻		BC	J ^π : 218.1γ M1+E2 to 15/2 ⁻ , 413.4γ E2 to 13/2 ⁻ ; band assignment.	
833.5 ^a 3	15/2 ⁺		BC	J ^π : 200.6γ M1+E2 to 13/2 ⁺ , 378.5γ to 11/2 ⁺ ; band assignment.	
864.93 ^t 6	3/2 ⁺		A	J ^π : 224.99γ M1+E2 to 5/2 ⁺ , 377.35γ M1 to 1/2 ⁺ ; band assignment. configuration: π 3/2[411] Nilsson configuration. The assignment is tentative.	
899.24 ^c 17	11/2 ⁻	<1.4 ns	B E	J ^π : 507.7γ M1 to 13/2 ⁻ ; 826.0γ M1 to the 9/2 ⁻ ; band assignment. T _{1/2} : From centroid-shift analysis in 2000Da09. configuration: π 11/2[505] (h _{11/2}). Note, that the measured (g _K -g _R)/Q ₀ =0.042 I (2000Da09) is somewhat lower than that expected for the 11/2[505] (h _{11/2}) configuration. Alternatively, a coupling of the quadrupole vibration to the π 9/2[514] orbital is also possible. See 2000Da09 for details.	
901.45 [#] 25	17/2 ⁺		BC	J ^π : 226.0γ M1+E2 to 15/2 ⁺ , 431.0γ E2 to 13/2 ⁺ ; band assignment.	
948.21 ^t 10	(5/2 ⁺)		A	J ^π : 308.52γ M1(+E2) to 5/2 ⁺ , 450.6γ M1 to 3/2 ⁺ ; band assignment.	
1010 1	5/2 ⁻ , 7/2 ⁻		EF	XREF: E(1011). E(level): From ¹⁷⁶ Hf(³ He,d) in 2006Bu19. J ^π : L(³ He,d)=3.	
1011.7 [@] 7	21/2 ⁻		BC	XREF: C(1009). J ^π : 352.3γ E2 to 17/2 ⁻ ; band assignment.	
1029.2 ^{&} 7	(15/2 ⁻)		B	J ^π : 292γ to 11/2 ⁻ ; 369.6γ to 17/2 ⁻ ; band assignment.	

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Adopted Levels, Gammas (continued) ^{177}Ta Levels (continued)

E(level) [†]	J ^π [‡]	T _{1/2}	XREF	Comments
1043.50 ^b 23	19/2 ⁻		BC	J ^π : 238.7γ M1+E2 to 17/2 ⁻ , 456.7γ E2 to 15/2 ⁻ ; band assignment.
1044.95 ^v 11	3/2 ⁻		A EF	XREF: E(1046)F(1045). J ^π : 672.15γ M1 to 1/2 ⁻ , 827.9γ M1 to 5/2 ⁻ ; L(³ He,d)=1. configuration: $\pi 1/2[530]$ Nilsson configuration. The assignment is tentative.
1054.6 ^a 3	17/2 ⁺		BC	J ^π : 221.2γ to 15/2 ⁺ , 421.7γ to 13/2 ⁺ ; band assignment.
1058.9 ^c 3	13/2 ⁻		B	J ^π : 159.7γ M1+E2 to 11/2 ⁻ ; band assignment.
1086 3	(5/2 ⁺ , 7/2 ⁺)		EF	E(level): From ¹⁷⁶ Hf(³ He,d) (2006Bu19). J ^π : L(³ He,d)=(2) (2006Bu19).
1094.20 ^v 10	(1/2) ⁻		A	J ^π : 721.6γ M1 to 3/2 ⁻ , 877.2γ M1 to 1/2 ⁻ .
1120 1	(5/2, 7/2)		EF	E(level): From ¹⁷⁶ Hf(³ He,d) (2006Bu19). J ^π : L(³ He,d)=2,3 (2006Bu19).
1146.7 [#] 3	19/2 ⁺		BC	J ^π : 245.4γ M1+E2 to 17/2 ⁺ , 471.2γ E2 to 15/2 ⁺ ; band assignment.
1161 ^v 1	(7/2) ⁻		EF	XREF: E(1162). E(level): From ¹⁷⁶ Hf(³ He,d) (2006Bu19). J ^π : L(³ He,d)=3 and band assignment (2006Bu19).
1239.16 ^c 23	15/2 ⁻		B	J ^π : 180.2γ to 13/2 ⁻ , 340.1γ (E2) to 11/2 ⁻ ; band assignment.
1253.32 8	3/2 ⁻		A	J ^π : 1036.4 M1 to 1/2 ⁻ , 1182.5γ E1 to 5/2 ⁺ .
1264 1	(5/2 ⁺ , 7/2 ⁺)		EF	E(level): From ¹⁷⁶ Hf(³ He,d) (2006Bu19). J ^π : L(³ He,d)=(2) (2006Bu19).
1295.5 ^a 4	19/2 ⁺		BC	J ^π : 240.9γ M1+E2 to 17/2 ⁺ , 461.9γ (E2) to 15/2 ⁺ ; band assignment.
1302.2 ^b 3	21/2 ⁻		BC	J ^π : 258.7γ M1+E2 to 19/2 ⁻ , 497.3γ E2 to 17/2 ⁻ ; band assignment.
1336 2	(5/2, 7/2)		EF	XREF: E(1341). E(level): From ¹⁷⁶ Hf(³ He,d) (2006Bu19). J ^π : L(³ He,d)=2,3 (2006Bu19).
1354.8 ^f 3	21/2 ⁻	5.30 μs 11	BC	$\mu=+0.080$ 14 J ^π : 311.3γ M1+E2 to 19/2 ⁻ , 549.9γ E2 to 17/2 ⁻ . T _{1/2} : Weighted average of 5.96 μs 21 (2000Da09), 5.2 μs 4 (2002Pf01), 5.00 μs 20 (1982Ao04), 5.02 μs 20 (1971Hu14), and 5.3 μs 5 (1972Ro05) using 311γ(t). μ : From 1982Ao04, 2014StZZ from g=0.0076 13 using the Integral Perturbed Angular Distribution technique. configuration: $K^\pi=21/2^-$, at low spin $\pi^3(5/2[402], 7/2[404], 9/2[514])$. At high spin configuration= $\nu^2\otimes\pi^1$ (see 1997Ko13 and 2000Da09 for details).
1362 3			EF	XREF: E(1365). E(level): From ¹⁷⁶ Hf(³ He,d) (2006Bu19).
1406.0 ^{&} 7	(19/2 ⁻)		B	J ^π : 377γ to (15/2 ⁻), 394.2γ to 21/2 ⁻ ; band assignment.
1408.8 [#] 3	21/2 ⁺		B	J ^π : 262.2γ to 19/2 ⁺ ; 507.3γ E2 to 17/2 ⁺ ; band assignment.
1431.6 ^c 3	17/2 ⁻		B	J ^π : 192.5γ to 15/2 ⁻ , 372.7γ to 13/2 ⁻ ; band assignment.
1448 3	(7/2 ⁻)		EF	XREF: E(1447). E(level): From ¹⁷⁶ Hf(³ He,d) (2006Bu19). J ^π : L(³ He,d)=(3) (2006Bu19).
1452.4 [@] 8	25/2 ⁻		BC	XREF: C(1449.9). J ^π : 440.6γ E2 to 21/2 ⁻ ; band assignment.
1475.7 ^d 3	(17/2 ⁻)	<1.4 ns	B	J ^π : 889γ to (15/2 ⁻), 1084.0γ to (13/2 ⁻). T _{1/2} : From centroid-shift analysis in 2000Da09. configuration: $K^\pi=(17/2^-)$, $\nu^2(1/2[521], 7/2[514])\otimes\pi(9/2[514])$. The assignment is tentative.
1476.53 9	(3/2) ⁻		A ef	XREF: e(1488)f(1484). J ^π : 382.3γ M1 to (1/2) ⁻ , 1290.1γ to 5/2 ⁻ .
1476.56 13	(3/2) ⁺		A ef	XREF: e(1488)f(1484). J ^π : 611.8γ E2 to 3/2 ⁺ ; direct feeding in ¹⁷⁷ W ε decay (J ^π =1/2 ⁻).
1487.72 17	(1/2) ⁻		A ef	XREF: e(1488)f(1484).

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Adopted Levels, Gammas (continued)

^{177}Ta Levels (continued)					
E(level) [†]	J ^π [‡]	T _{1/2}	XREF	Comments	
1512.55 <i>10</i>	(1/2) ⁻		A ef	J ^π : 1271.1γ E0+M1 to 1/2 ⁻ ; direct feeding in ^{177}W ε decay (J ^π =1/2 ⁻). XREF: e(1510)f(1510).	
1522.85 ^e <i>19</i>	17/2 ⁺	5.5 ns <i>14</i>	B	J ^π : 1296.1γ E0+M1 to 1/2 ⁻ , 647.3γ E1 to 3/2 ⁺ ; direct feeding in ^{177}W ε decay (J ^π =1/2 ⁻). J ^π : 935.9γ E1 to 15/2 ⁻ , 479.3γ E1 to 19/2 ⁻ ; band assignment.	
1543.45 <i>14</i>	3/2 ⁻		A	T _{1/2} : From γ(t) and γγ(t) in 2000Da09 , configuration: K ^π =17/2 ⁺ , π ³ (1/2[541],7/2[404],9/2[514]). J ^π : 1170.9γ M1 to 3/2 ⁻ , 1055.8γ to 1/2 ⁺ , 903.5γ to 5/2 ⁺ ; direct feeding in ^{177}W ε decay (J ^π =1/2 ⁻).	
1553.4 ^a <i>4</i>	21/2 ⁺		B	J ^π : 221.2γ to 19/2 ⁺ , 421.7γ E2 to 17/2 ⁺ ; band assignment.	
1577.1 ^b <i>3</i>	23/2 ⁻		BC	J ^π : 274.9γ M1+E2 to 21/2 ⁻ , 497.3γ E2 to 19/2 ⁻ ; band assignment.	
1602.60 ^g <i>23</i>	19/2 ⁻	<1.4 ns	B	J ^π : 363.4γ (E2) from to 15/2 ⁻ , 797.8γ M1 to 17/2 ⁻ . T _{1/2} : From centroid-shift analysis in 2000Da09 . configuration: K ^π =19/2 ⁻ , ν ² (7/2[514],7/2[633])⊗π(5/2[402]) or ν ² (5/2[642],7/2[514])⊗π(7/2[404]).	
1605.3 ^e <i>4</i>	19/2 ⁺		B	J ^π : 82.5γ to 17/2 ⁺ ; band assignment.	
1625.7 ^f <i>4</i>	23/2 ⁻		BC	J ^π : 271.0γ M1+E2 to 21/2 ⁻ ; band assignment.	
1634 <i>2</i>	(5/2 ⁺ ,7/2 ⁺)		EF	XREF: E(1638). E(level): From $^{176}\text{Hf}(^3\text{He},\text{d})$ (2006Bu19). J ^π : L($^3\text{He},\text{d}$)=(2) (2006Bu19).	
1650.7 ^d <i>4</i>	(19/2 ⁻)		B	J ^π : 175.0γ to (17/2 ⁻); band assignment.	
1685.7 [#] <i>4</i>	23/2 ⁺		B	J ^π : 276.9γ to 21/2 ⁺ ; 539.0γ E2 to 19/2 ⁺ ; band assignment.	
1698.3 ⁱ <i>4</i>	23/2 ⁺	<1 ns	BC	J ^π : 343.5γ E1 to 21/2 ⁻ . T _{1/2} : From centroid-shift analysis in 2000Da09 . configuration: K ^π =23/2 ⁺ , ν ² (7/2[514],7/2[633])⊗π(9/2[514]).	
1737.3 ^e <i>4</i>	21/2 ⁺		B	J ^π : 131.9γ M1+E2 to 19/2 ⁺ ; band assignment.	
1766.04 ^g <i>25</i>	21/2 ⁻		B	J ^π : 163.5γ (M1+E2) to 19/2 ⁻ ; band assignment.	
1800 <i>3</i>			EF	XREF: E(1804). E(level): From $^{176}\text{Hf}(^3\text{He},\text{d})$ (2006Bu19).	
1828.1 ^a <i>4</i>	23/2 ⁺		B	J ^π : 274.8γ M1+E2 to 21/2 ⁺ , 532.5 to 19/2 ⁺ ; band assignment.	
1834.5 ⁱ <i>4</i>	25/2 ⁺		BC	J ^π : 136.1γ M1+E2 to 23/2 ⁺ , 208.8 E1 to 23/2 ⁻ ; band assignment.	
1864.9 ^{&} <i>8</i>	(23/2 ⁻)		B	J ^π : 459γ to (19/2 ⁻); band assignment.	
1869.0 ^b <i>4</i>	25/2 ⁻		BC	J ^π : 292.0γ to 23/2 ⁻ , 497.3γ to 21/2 ⁻ ; band assignment.	
1874.6 ^h <i>4</i>	25/2 ⁻		B	J ^π : 248.9γ M1+E2 to 23/2 ⁻ , 519.6γ to 21/2 ⁻ band assignment. configuration: K ^π =(21/2 ⁻), ν ² (7/2[514],7/2[633])⊗π(7/2[404]) or ν ² (7/2[514],9/2[624])⊗π(5/2[402]).	
1904.5 ^e <i>4</i>	23/2 ⁺		B	J ^π : 167.1γ M1+E2 to 21/2 ⁺ , 299.3γ to 19/2 ⁺ ; band assignment.	
1920.1 ^f <i>4</i>	25/2 ⁻		BC	J ^π : 294.3γ M1+E2 to 23/2 ⁻ , 565γ to 21/2 ⁻ ; band assignment.	
1949.4 ^g <i>3</i>	23/2 ⁻		BC	XREF: C(1945.3). J ^π : 183.1γ to 21/2 ⁻ , 346.9γ to 19/2 ⁻ ; band assignment.	
1973.1 [@] <i>8</i>	29/2 ⁻		B	J ^π : 520.7γ E2 to 21/2 ⁻ ; band assignment.	
1975.0 [#] <i>4</i>	25/2 ⁺		B	J ^π : 289.4γ to 23/2 ⁺ , 566.1γ to 21/2 ⁺ ; band assignment.	
2037.0 ⁱ <i>4</i>	27/2 ⁺		BC	J ^π : 202.5γ M1+E2 to 25/2 ⁺ , 338.7γ to 23/2 ⁺ ; band assignment.	
2098.1 ^j <i>5</i>	25/2 ⁺	<2.8 ns	BC	J ^π : 399.7γ M1 to 23/2 ⁺ ; the assigned configuration. T _{1/2} : From centroid-shift analysis in 2000Da09 . configuration: K ^π =25/2 ⁺ , ν ² (7/2[514],9/2[624])⊗π(9/2[514]).	
2101.5 ^e <i>5</i>	25/2 ⁺		B	J ^π : 196.9γ M1+E2 to 23/2 ⁺ , 364.3γ to 21/2 ⁺ ; band assignment.	
2116.0 ^a <i>4</i>	25/2 ⁺		B	J ^π : 287.9γ to 23/2 ⁺ , 562.6γ to 21/2 ⁺ ; band assignment.	
2116.6 ^h <i>4</i>	27/2 ⁻		B	J ^π : 242.1γ M1+E2 to 25/2 ⁻ , 490.9γ to 21/2 ⁻ ; band assignment.	
2154.1 ^g <i>3</i>	25/2 ⁻		B	J ^π : 204.7γ M1+E2 to 23/2 ⁻ , 388.0γ to 21/2 ⁻ ; band assignment.	
2171.4 ^b <i>4</i>	27/2 ⁻		B	J ^π : 302.6γ M1+E2 to 25/2 ⁻ , 594.3γ to 23/2 ⁻ ; band assignment.	

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Adopted Levels, Gammas (continued) ^{177}Ta Levels (continued)

E(level) [†]	J ^π [‡]	T _{1/2}	XREF	Comments
2192.6 ^f 4	27/2 ⁻		B	J ^π : 272.6γ M1+E2 to 25/2 ⁻ , 566.8γ to 23/2 ⁻ ; band assignment.
2271.1 ⁱ 4	29/2 ⁺		BC	J ^π : 234.1γ M1+E2 to 27/2 ⁺ , 436.6γ to 25/2 ⁺ level; band assignment.
2274.1 [#] 4	27/2 ⁺		B	J ^π : 299.3γ to 25/2 ⁺ , 588.3γ to 23/2 ⁺ ; band assignment.
2324.1 ^e 5	27/2 ⁺		B	J ^π : 222.7γ to 25/2 ⁺ , 419.5γ to 23/2 ⁺ ; band assignment.
2324.3 ^j 5	27/2 ⁺		B	J ^π : 226.2γ M1+E2 to 25/2 ⁺ ; band assignment.
2380.4 ^h 4	29/2 ⁻		B	J ^π : 263.9γ M1+E2 to 27/2 ⁻ , 505.8γ to 25/2 ⁻ ; band assignment.
2381.0 ^g 4	27/2 ⁻		B	J ^π : 226.9γ M1+E2 to 25/2 ⁻ , 431.7γ to 23/2 ⁻ ; band assignment.
2399.0 ^{&} 9	(27/2 ⁻)		B	J ^π : 534γ E2 to (23/2 ⁻); band assignment.
2417.4 ^a 5	27/2 ⁺		B	J ^π : 301.2γ to 25/2 ⁺ , 589.2γ to 23/2 ⁺ ; band assignment.
2470.9 ^f 4	29/2 ⁻		B	J ^π : 278.4γ to 27/2 ⁻ , 550.7γ to 25/2 ⁻ ; band assignment.
2487.3 ^b 4	29/2 ⁻		B	J ^π : 315.9γ M1+E2 to 27/2 ⁻ , 618.2γ to 25/2 ⁻ ; band assignment.
2529.9 ⁱ 4	31/2 ⁺		BC	J ^π : 258.8γ M1+E2 to 29/2 ⁺ , 492.9γ E2 to 27/2 ⁺ ; band assignment.
2565.8 [@] 9	33/2 ⁻		B	J ^π : 592.6γ to 29/2 ⁻ ; band assignment.
2569.9 ^e 5	29/2 ⁺		B	J ^π : 245.8γ M1+E2 to 27/2 ⁺ , 468.5γ to 25/2 ⁺ ; band assignment.
2569.9 ^j 6	29/2 ⁺		B	J ^π : 245.6γ M1+E2 to 27/2 ⁺ , 472γ to 25/2 ⁺ ; band assignment.
2582.2 [#] 4	29/2 ⁺		B	J ^π : 308.5γ to 27/2 ⁺ , 607.0γ to 25/2 ⁺ ; band assignment.
2628.5 ^g 5	(29/2 ⁻)		B	J ^π : Possible 247.5γ to 27/2 ⁻ , 474.4γ to 25/2 ⁻ ; band assignment.
2666.0 ^h 5	31/2 ⁻		B	J ^π : 285.6γ to 29/2 ⁻ , 549.3γ (E2) to 27/2 ⁻ ; band assignment.
2671.1 ^k 4	29/2 ⁺	<2.8 ns	B	J ^π : 399.8γ (M1) to 29/2 ⁺ , 572.9γ to 25/2 ⁺ , 155.2γ M1 from 31/2 ⁺ . T _{1/2} : From centroid-shift analysis in 2000Da09 . configuration: $K^{\pi}=29/2^{+}, \nu^2(5/2[512], 7/2[514]) \otimes \pi^3(1/2[541], 7/2[404], 9/2[514])$.
2727.3 ^a 5	29/2 ⁺		B	J ^π : 309.8γ to 27/2 ⁺ , 611.7γ to 25/2 ⁺ ; band assignment.
2754.9 ^f 4	31/2 ⁻		B	J ^π : 284.2γ to 29/2 ⁻ , 562.2γ to 27/2 ⁻ ; band assignment.
2807.2 ^b 4	31/2 ⁻		B	J ^π : 320.0γ to 29/2 ⁻ , 635.8γ to 27/2 ⁻ ; band assignment.
2810.2 ⁱ 5	33/2 ⁺		B	J ^π : 280.3γ M1+E2 to 31/2 ⁺ , 539.1 (E2) to 29/2 ⁺ ; band assignment.
2826.3 ^l 4	31/2 ⁺	23 ns 4	B	J ^π : 296.5γ to 31/2 ⁺ , 789.3γ E2 to 27/2 ⁺ . configuration: $K^{\pi}=31/2^{+}, \nu^4(1/2[521], 5/2[512], 7/2[514], 9/2[624]) \otimes \pi(9/2[514])$ or $\nu^2(1/2[521], 9/2[624]) \otimes \pi^3(5/2[402], 7/2[404], 9/2[514])$. See 2000Da09 for details.
2831.2 ^j 4	(31/2 ⁺)		B	J ^π : 261γ to 29/2 ⁺ ; band assignment.
2839.9 ^e 5	31/2 ⁺		B	J ^π : 269.9γ to 29/2 ⁺ , 515.7γ to 27/2 ⁺ ; band assignment.
2852.5 ^m 5	33/2 ⁻	46 ns 4	B	J ^π : 26.3γ E1 to 31/2 ⁺ . T _{1/2} : From a two-level lifetimes fit using 363.2γ-(sum of 555.3γ, 789.3γ and 436.6γ)(Δt) (2000Da09). The value is consistent with that of 59 ns <i>l7</i> deduced from 26γ(t) in the LEPS detector (2000Da09). configuration: $K^{\pi}=33/2^{-}, \nu^2(5/2[512], 7/2[514]) \otimes \pi^3(5/2[402], 7/2[404], 9/2[514])$.
2893.6 [#] 5	31/2 ⁺		B	J ^π : 311.7γ to 29/2 ⁺ , 619.3γ to 27/2 ⁺ ; band assignment.
2896.2 ^g 5	(31/2 ⁻)		B	J ^π : 515.2γ to 29/2 ⁻ ; band assignment.
2956.8 ^o 6	35/2 ⁺	1.8 ns 4	B	J ^π : 104.2γ E1 to 33/2 ⁻ level. T _{1/2} : Weighted average of 1.7 ns 4 from 104.2γ(t) in the LEPS detector and 2.1 ns 7 from 104.2γ-(sum of 232.5γ, 321.7γ, 357.0γ and 461.5γ)(Δt) (2000Da09). configuration: $K^{\pi}=35/2^{+}, \nu^2(7/2[514], 7/2[633]) \otimes \pi^3(5/2[402], 7/2[404], 9/2[514])$.
2971.1 ^h 5	33/2 ⁻		B	J ^π : 305.2γ to 31/2 ⁻ , 590.8γ to 29/2 ⁻ ; band assignment.
3000.6 ^{& 10}	(31/2 ⁻)		B	J ^π : 602γ to (27/2 ⁻); band assignment.
3046.3 ^f 5	33/2 ⁻		B	J ^π : 291.4γ to 31/2 ⁻ , 575.5γ 29/2 ⁻ ; band assignment.
3048.4 ^a 5	31/2 ⁺		B	J ^π : 321.2γ to 29/2 ⁺ , 630.8γ 27/2 ⁺ ; band assignment.
3109.5 ⁱ 5	35/2 ⁺		B	J ^π : 299.4γ 33/2 ⁺ , 579.6γ E2 to 31/2 ⁺ ; band assignment.
3129.4 ^e 5	33/2 ⁺		B	J ^π : 289.4γ 31/2 ⁺ , 559.7γ E2 to 29/2 ⁺ ; band assignment.
3135.3 ^b 5	33/2 ⁻		B	J ^π : 328.2γ to 31/2 ⁻ , 647.9γ to 29/2 ⁻ ; band assignment.

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Adopted Levels, Gammas (continued) ^{177}Ta Levels (continued)

E(level) [†]	J ^π	T _{1/2}	XREF	Comments
3145.5 ^l 5	(33/2 ⁺)		B	J ^π : 319.2γ to 31/2 ⁺ ; band assignment.
3181.0 ^g 6	(33/2 ⁻)		B	J ^π : 552.5γ to (29/2 ⁻); band assignment.
3189.3 ^o 7	37/2 ⁺		B	J ^π : 232.5γ M1+E2 to 35/2 ⁺ ; band assignment.
3210.0 [#] 5	33/2 ⁺		B	J ^π : 316.5γ to 31/2 ⁺ , 627.8γ to 27/2 ⁺ ; band assignment.
3215.6 ^m 6	35/2 ⁻		B	J ^π : 363.2γ M1+E2 to 33/2 ⁻ ; band assignment.
3223.2 [@] 9	37/2 ⁻		B	J ^π : 657.4γ to 33/2 ⁻ ; band assignment.
3287.0 ⁿ 6	(37/2 ⁻)	<1.4 ns	B	J ^π : 71.5γ M1 to 35/2 ⁻ ; 330.1γ to 35/2 ⁺ level. T _{1/2} : From centroid-shift analysis in 2000Da09 . configuration: K ^π =(37/2) ⁻ , ν ⁴ (5/2[512],7/2[514],7/2[633],9/2[624])⊗π(9/2[514]).
3294.4 ^h 5	35/2 ⁻		B	J ^π : 323.4γ to 33/2 ⁻ , 628.3γ to 31/2 ⁻ ; band assignment.
3345.6 ^f 5	35/2 ⁻		B	J ^π : 299.4γ to 33/2 ⁻ , 590.6γ to 31/2 ⁻ ; band assignment.
3373.2 ^a 6	(33/2 ⁺)		B	J ^π : 645.9γ to (29/2 ⁺); band assignment.
3426.0 ⁱ 5	37/2 ⁺		B	J ^π : 316.6γ to 35/2 ⁺ , 615.8γ to 33/2 ⁺ ; band assignment.
3438.1 ^e 5	35/2 ⁺		B	J ^π : 308.8γ to 33/2 ⁺ , 598.2γ to 31/2 ⁺ ; band assignment.
3458.2 ^b 5	(35/2 ⁻)		B	J ^π : 323γ to 33/2 ⁻ , 651.0γ to 31/2 ⁻ ; band assignment.
3480.7 ^g 6	(35/2 ⁻)		B	J ^π : 584.5γ to (31/2 ⁻); band assignment.
3483.7 ^l 4	(35/2 ⁺)		B	J ^π : 338γ to (33/2 ⁺); band assignment.
3511.0 ^o 7	39/2 ⁺		B	J ^π : 321.7γ M1+E2 to 37/2 ⁺ , 554γ to 35/2 ⁺ ; band assignment.
3531.0 [#] 6	(35/2 ⁺)		B	J ^π : 637.4γ to 31/2 ⁺ ; band assignment.
3589.6 ^m 6	37/2 ⁻		B	J ^π : 374.0γ to 35/2 ⁻ , 737γ to 33/2 ⁻ ; band assignment.
3615.7 ⁿ 7	(39/2 ⁻)		B	J ^π : 328.9γ to (37/2 ⁻); band assignment.
3633.1 ^h 6	(37/2 ⁻)		B	J ^π : 662.0γ to 33/2 ⁻ ; band assignment.
3653.5 ^f 5	37/2 ⁻		B	J ^π : 308.1γ to 35/2 ⁻ , 607.0γ 33/2 ⁻ ; band assignment.
3661.6 ^{&} 14	(35/2 ⁻)		B	J ^π : 661γ to (31/2 ⁻); band assignment.
3707.5 ^a 4	(35/2 ⁺)		B	J ^π : 659γ to (31/2 ⁺); band assignment.
3757.7 ⁱ 5	39/2 ⁺		B	J ^π : 331.7γ to 37/2 ⁺ , 648.2 to 35/2 ⁺ ; band assignment.
3764.3 ^e 6	37/2 ⁺		B	J ^π : 326.3γ 35/2 ⁺ , 634.7γ (E2) to 33/2 ⁺ ; band assignment.
3779.1 ^g 4	(37/2 ⁻)		B	J ^π : 598.0γ to (33/2 ⁻); band assignment.
3803.0 ^b 6	(37/2 ⁻)		B	J ^π : 667.7γ to 33/2 ⁻ ; band assignment.
3859.8 [#] 6	(37/2 ⁺)		B	J ^π : 649.8γ to 33/2 ⁺ ; band assignment.
3867.9 ^o 7	41/2 ⁺		B	J ^π : 357.0γ M1+E2 to 39/2 ⁺ , 678.6γ (E2) to 37/2 ⁺ ; band assignment.
3940.0 [@] 10	41/2 ⁻		B	J ^π : 716.8γ to 37/2 ⁻ ; band assignment.
3958.4 ⁿ 7	(41/2 ⁻)		B	J ^π : 342.9γ to (39/2 ⁻), 671.2γ to (37/2 ⁻); band assignment.
3968.5 ^f 6	39/2 ⁻		B	J ^π : 315γ to 37/2 ⁻ , 622.9γ to 35/2 ⁻ ; band assignment.
3977.7 ^m 4	(39/2 ⁻)		B	J ^π : 388γ to 35/2 ⁻ ; band assignment.
3987.6 ^h 6	(39/2 ⁻)		B	J ^π : 693.2γ to 35/2 ⁻ ; band assignment.
4059.3 ^a 5	(37/2 ⁺)		B	J ^π : 686γ to (33/2 ⁺); band assignment.
4093.2 ^b 6	(39/2 ⁻)		B	J ^π : 635.0γ to (35/2 ⁻); band assignment.
4103.1 ⁱ 6	(41/2 ⁺)		B	J ^π : 677.1γ to 37/2 ⁺ ; band assignment.
4195.7 [#] 6	(39/2 ⁺)		B	J ^π : 664.7γ to (35/2 ⁺); band assignment.
4248.6 ^o 7	43/2 ⁺		B	J ^π : 380.8γ to 41/2 ⁺ , 737.7γ to 39/2 ⁺ ; band assignment.
4316.7 ⁿ 7	(43/2 ⁻)		B	J ^π : 358.5γ to (41/2 ⁻), 700.9γ to (39/2 ⁻); band assignment.
4329.4 ^p 7	43/2 ⁺	0.69 ns 21	B	J ^π : 451.5γ M1 to 41/2 ⁺ , 818.3γ to 39/2 ⁺ ; band assignment. T _{1/2} : From 461.5γ(t) in the LEPS detector (2000Da09). configuration: K ^π =43/2 ⁺ , ν ⁴ (1/2[521],5/2[512],7/2[514],9/2[624])⊗π ³ (5/2[402],7/2[404],9/2[514]).
4352.4 ^h 7	(41/2 ⁻)		B	J ^π : 719.3γ to (37/2 ⁻); band assignment.
4425.8 ^a 5	(39/2 ⁺)		B	J ^π : 718.3γ to (35/2 ⁺); band assignment.

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Adopted Levels, Gammas (continued) ^{177}Ta Levels (continued)

E(level) [†]	J ^π [‡]	T _{1/2}	XREF	Comments
4459.3 ⁱ 6	(43/2 ⁺)		B	J ^π : 701.6γ to 39/2 ⁺ ; band assignment.
4504.8 ^b 6	(41/2 ⁻)		B	J ^π : 701.8γ to (37/2 ⁻); band assignment.
4541.3 [#] 7	(41/2 ⁺)		B	J ^π : 681.5γ to (37/2 ⁺); band assignment.
4570.2 ^q 8	45/2 ⁻	<0.7 ns	B	J ^π : 240.8γ E1 to 43/2 ⁺ . T _{1/2} : From centroid-shift analysis in 2000Da09. configuration: $K^{\pi}=45/2^{-}$, $\nu^4(1/2[521], 7/2[514], 7/2[633], 9/2[624])\otimes\pi^3(5/2[402], 7/2[404], 9/2[514])$.
4647.2 ^o 7	45/2 ⁺		B	J ^π : 398.7γ to 43/2 ⁺ , 779.0γ to 41/2 ⁺ ; band assignment.
4656.3 ^r 8	49/2 ⁻	133 μs 4	B	J ^π : 86.1γ E2 to 45/2 ⁻ . T _{1/2} : From sum of 461γ(t), 357γ(t) and 104γ(t) in 2000Da09. configuration: $K^{\pi}=49/2^{-}$, $\nu^4(5/2[512], 7/2[514], 7/2[633], 9/2[624])\otimes\pi^3(5/2[402], 7/2[404], 9/2[514])$.
4691.6 ⁿ 7	(45/2 ⁻)		B	J ^π : 375.0γ to (43/2 ⁻), 733.0γ to (41/2 ⁻); band assignment.
4715.2 [@] 10	45/2 ⁻		B	J ^π : 775.2γ to 41/2 ⁻ ; band assignment.
4727.6 ^h 7	(43/2 ⁻)		B	J ^π : 740.0γ to (39/2 ⁻); band assignment.
4740.4 ^p 5	(45/2 ⁺)		B	J ^π : 411γ to 43/2 ⁺ ; band assignment.
4825.3 ⁱ 4	(45/2 ⁺)		B	J ^π : 722γ to (41/2 ⁺); band assignment.
4900.9 [#] 5	(43/2 ⁺)		B	J ^π : 705γ to (39/2 ⁺); band assignment.
4983.2 ^q 13	(47/2 ⁻)		B	J ^π : 413γ to 45/2 ⁻ ; band assignment.
5058.3 ^o 7	47/2 ⁺		B	J ^π : 411.1γ to 45/2 ⁺ , 809.8γ to 43/2 ⁺ ; band assignment.
5083.0 ⁿ 8	(47/2 ⁻)		B	J ^π : 391.4γ to (45/2 ⁻), 766γ to (43/2 ⁻); band assignment.
5195.5 ⁱ 5	(47/2 ⁺)		B	J ^π : 736γ to (43/2 ⁺); band assignment.
5270.9 [#] 7	(45/2 ⁺)		B	J ^π : 729.6γ to (41/2 ⁺); band assignment.
5413.2 ^q 6	(49/2 ⁻)		B	J ^π : 430γ to (47/2 ⁻); band assignment.
5478.8 ^o 8	(49/2 ⁺)		B	J ^π : 420.5γ to 47/2 ⁺ ; band assignment.
5547.9 [@] 11	(49/2 ⁻)		B	J ^π : 832.7γ to 45/2 ⁻ ; band assignment.
5904.9 ^o 5	(51/2 ⁺)		B	J ^π : 426γ to (49/2 ⁺); band assignment.
6436.8 [@] 15	(53/2 ⁻)		B	J ^π : 888.9γ to (49/2 ⁻); band assignment.

[†] From a least-squares fit to Eγ, unless otherwise stated.[‡] Based on deduced γ-ray transition multipolarities using the measured angular distributions, conversion electron coefficients and sub-shell ratios, the apparent band structures with both cascade (ΔJ=1) and crossover (ΔJ=2) transitions, and the γ-ray decay pattern, unless otherwise stated.[#] Band(A): $K^{\pi}=7/2^{+}$: $\pi 7/2[404]$ ($g_{7/2}$) band.[@] Band(B): $K^{\pi}=1/2^{-}$: $\pi 1/2[541]$ ($h_{9/2}$) ($\alpha=+1/2$) band.[&] Band(C): $K^{\pi}=1/2^{-}$: $\pi 1/2[541]$ ($h_{9/2}$) ($\alpha=-1/2$) band.^a Band(D): $K^{\pi}=5/2^{+}$: $\pi 5/2[402]$ ($d_{5/2}$) band.^b Band(E): $K^{\pi}=9/2^{-}$: $\pi 9/2[514]$ ($h_{11/2}$) band.^c Band(F): $K^{\pi}=11/2^{-}$: $\pi 11/2[505]$ ($h_{11/2}$) band.^d Band(G): Tentative $K=(17/2^{-})$: $\nu^2(1/2[521], 7/2[514])\otimes\pi(9/2[514])$.^e Band(H): $K^{\pi}=17/2^{+}$: $\pi^3(1/2[541], 7/2[404], 9/2[514])$.^f Band(I): $K^{\pi}=21/2^{-}$: At low spin configuration= $\pi^3(5/2[402], 7/2[404], 9/2[514])$.^g Band(J): $K^{\pi}=19/2^{-}$: $\nu^2(7/2[514], 7/2[633])\otimes\pi(5/2[402])$ or $\nu^2(5/2[642], 7/2[514])\otimes\pi(7/2[404])$.^h Band(K): $K^{\pi}=(21/2^{-})$: $\nu^2(7/2[514], 7/2[633])\otimes\pi(7/2[404])$ or $\nu^2(7/2[514], 9/2[624])\otimes\pi(5/2[402])$.ⁱ Band(L): $K^{\pi}=23/2^{+}$: $\nu^2(7/2[514], 7/2[633])\otimes\pi(9/2[514])$.^j Band(M): $K^{\pi}=25/2^{+}$: $\nu^2(7/2[514], 9/2[624])\otimes\pi(9/2[514])$.^k Band(N): $K^{\pi}=(29/2^{+})$: $\nu^2(5/2[512], 7/2[514])\otimes\pi^3(1/2[541], 7/2[404], 9/2[514])$.

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Adopted Levels, Gammas (continued) ^{177}Ta Levels (continued)

- ^l Band(O): $K^\pi=31/2^+$: $\nu^4(1/2[521],5/2[512],7/2[514],9/2[624])\otimes \pi(9/2[514])$ or $\nu^2(1/2[521],9/2[624])\otimes \pi^3(5/2[402],7/2[404],9/2[514])$. See [2000Da09](#) for details.
- ^m Band(P): $K^\pi=33/2^-$: $\nu^2(5/2[512],7/2[514])\otimes \pi^3(5/2[402],7/2[404],9/2[514])$.
- ⁿ Band(Q): $K^\pi=(37/2)^-$: $\nu^4(5/2[512],7/2[514],7/2[633],9/2[624])\otimes \pi(9/2[514])$.
- ^o Band(R): $K^\pi=35/2^+$: $\nu^2(7/2[514],7/2[633])\otimes \pi^3(5/2[402],7/2[404],9/2[514])$.
- ^p Band(S): $K^\pi=43/2^+$: $\nu^4(1/2[521],5/2[512],7/2[514],9/2[624])\otimes \pi^3(5/2[402],7/2[404],9/2[514])$.
- ^q Band(T): $K^\pi=45/2^-$: $\nu^4(1/2[521],7/2[514],7/2[633],9/2[624])\otimes \pi^3(5/2[402],7/2[404],9/2[514])$.
- ^r Band(U): $K^\pi=49/2^-$: $\nu^4(5/2[512],7/2[514],7/2[633],9/2[624])\otimes \pi^3(5/2[402],7/2[404],9/2[514])$.
- ^s Band(V): $K^\pi=1/2^+$: $\pi 1/2[411]$ ($d_{3/2}$).
- ^t Band(W): $K^\pi=3/2^+$: $\pi 3/2[411]$ ($d_{5/2}$).
- ^u Band(X): $K^\pi=3/2^-$: $\pi 3/2[532]$ ($h_{9/2}$).
- ^v Band(w): $K^\pi=1/2^-$: $\pi 1/2[530]$ ($f_{7/2}$).

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$									Comments
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\delta^\#$	$\alpha^@$	
70.48	5/2 ⁺	70.45 [‡] 5	100 [‡]	0.0	7/2 ⁺	M1+E2	0.564 3	12.82 19	$\alpha(\text{K})=7.74$ 11; $\alpha(\text{L})=3.87$ 6; $\alpha(\text{M})=0.945$ 15 $\alpha(\text{N})=0.222$ 4; $\alpha(\text{O})=0.0308$ 5; $\alpha(\text{P})=0.000747$ 11 $\text{B}(\text{M1})(\text{W.u.})=4.92\times 10^{-5}$ 15; $\text{B}(\text{E2})(\text{W.u.})=1.37$ 5 Mult.: $\alpha(\text{K})_{\text{exp}}=8.1$ 4, $\alpha(\text{L})_{\text{exp}}=3.8$ 6 and $\alpha(\text{M})_{\text{exp}}=0.94$ 21; (ce(L1):ce(L2):ce(L3))exp=1.00:1.29:1.17 (1972Ad12); (ce(L1):ce(L2):ce(L3))exp=84.7 9; 107.2 10:100 and (ce(M1):ce(M2):ce(M3))exp=74.5 21:106.2 29: 100 (1988La19); $A_2=-0.05$ 20 (1970Sk04). δ : From 1988La19; penetration parameter $\lambda=0.6$ 3. Others: 0.56 3 using the briccmixing program and conversion electron data in 1972Ad12; -0.10 4 or -4.2 8 from $\gamma\gamma(\theta)$ and 0.0 2 or 2.4 10 from PPDAC analysis in 1976Ao02; -0.096 37 from PPDAC analysis in 1974Ao01.
73.16	9/2 ⁻	73.15 [‡] 9	100 [‡]	0.0	7/2 ⁺	E1		0.815	$\alpha(\text{K})=0.658$ 10; $\alpha(\text{L})=0.1224$ 18; $\alpha(\text{M})=0.0279$ 4 $\alpha(\text{N})=0.00651$ 10; $\alpha(\text{O})=0.000933$ 14; $\alpha(\text{P})=4.21\times 10^{-5}$ 6 $\text{B}(\text{E1})(\text{W.u.})=7.36\times 10^{-7}$ 14 Mult.: $A_2=-0.24$ 12 (1970Sk04).
130.98	9/2 ⁺	131.2 3	100	0.0	7/2 ⁺	M1+E2	+0.5 3	1.87 14	$\alpha(\text{K})=1.44$ 23; $\alpha(\text{L})=0.33$ 7; $\alpha(\text{M})=0.078$ 18 $\alpha(\text{N})=0.019$ 5; $\alpha(\text{O})=0.0028$ 5; $\alpha(\text{P})=0.000132$ 24 Mult., δ : $A_2=0.33$ 5 (1970Sk04).
172.25	7/2 ⁺	101.75 [‡] 5	100 [‡] 24	70.48	5/2 ⁺	M1+E2	+0.6 4	3.97 17	$\alpha(\text{K})=2.8$ 6; $\alpha(\text{L})=0.92$ 34; $\alpha(\text{M})=0.221$ 87 $\alpha(\text{N})=0.052$ 20; $\alpha(\text{O})=0.0074$ 25; $\alpha(\text{P})=0.00025$ 7 Mult., δ : $\alpha(\text{K})_{\text{exp}}=3.0$ 9 and $\alpha(\text{L1})_{\text{exp}}=0.38$ 11 (1972Ad12); $A_2=0.10$ 17 (2000Da09); $A_2=-0.06$ 7 (1970Sk04).
		172.5 [‡] 2	28 [‡] 7	0.0	7/2 ⁺	E0+M1+E2		1.6 6	$\alpha(\text{K})=0.771$ 11; $\alpha(\text{L})=0.1206$ 18; $\alpha(\text{M})=0.0273$ 4 $\alpha(\text{N})=0.00654$ 10; $\alpha(\text{O})=0.001036$ 15; $\alpha(\text{P})=7.18\times 10^{-5}$ 11 α : $\alpha(\text{K})_{\text{exp}}$. Mult.: $\alpha(\text{K})_{\text{exp}}=1.6$ 6 and $\alpha(\text{L})_{\text{exp}}\leq 0.38$ (1972Ad12).
186.16	5/2 ⁻	(13.90 [‡] 9)	0.24 [‡] 7	172.25	7/2 ⁺	[E1]		14.8 4	$\alpha(\text{L})=11.3$ 3; $\alpha(\text{M})=2.76$ 7 $\alpha(\text{N})=0.611$ 14; $\alpha(\text{O})=0.0671$ 15; $\alpha(\text{P})=0.00154$ 3 $\text{B}(\text{E1})(\text{W.u.})=3.2\times 10^{-8}$ 10
		(113.0 [‡] 1)	0.25 [‡] 5	73.16	9/2 ⁻	[E2]		2.30	$\alpha(\text{K})=0.717$ 11; $\alpha(\text{L})=1.205$ 18; $\alpha(\text{M})=0.302$ 5 $\alpha(\text{N})=0.0707$ 11; $\alpha(\text{O})=0.00935$ 14; $\alpha(\text{P})=4.93\times 10^{-5}$ 7 $\text{B}(\text{E2})(\text{W.u.})=0.00022$ 5
		115.65 [‡] 5	100 [‡] 4	70.48	5/2 ⁺	E1		0.251	$\alpha(\text{K})=0.207$ 3; $\alpha(\text{L})=0.0347$ 5; $\alpha(\text{M})=0.00788$ 11 $\alpha(\text{N})=0.00185$ 3; $\alpha(\text{O})=0.000273$ 4; $\alpha(\text{P})=1.399\times 10^{-5}$ 20 $\text{B}(\text{E1})(\text{W.u.})=2.33\times 10^{-8}$ 8 Mult.: (ce(K):ce(L))exp=5.8 17, (ce(L1):ce(L2):ce(L3))exp=1.00:0.27:0.29 (1972Ad12), $\alpha(\text{K})_{\text{exp}}$ (115 γ doublet)=0.29 9 (1967Hu02).
		186.2 [‡] 2	32.3 [‡] 16	0.0	7/2 ⁺	E1		0.0730	$\alpha(\text{K})=0.0606$ 9; $\alpha(\text{L})=0.00961$ 14; $\alpha(\text{M})=0.00217$ 4

Adopted Levels, Gammas (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. †	$\gamma(^{177}\text{Ta})$ (continued)		Comments
							$\delta^\#$	$\alpha^@$	
216.63	1/2 ⁻	30.45 [‡] 5	100 [‡]	186.16	5/2 ⁻	(E2)		881	$\alpha(\text{N})=0.000513$ 8; $\alpha(\text{O})=7.76\times 10^{-5}$ 11; $\alpha(\text{P})=4.39\times 10^{-6}$ 7 B(E1)(W.u.)= 1.80×10^{-9} 11 Mult.: $\text{ce}(\text{K})/\text{ce}(\text{L})\text{exp}=6.2$ 10, $(\text{ce}(\text{L}1+\text{L}2))/\text{ce}(\text{L}3)\text{exp}=10$ (1972Ad12); $\alpha(\text{K})\text{exp}$ (186 γ doublet)=0.35 7 (1967Hu02). $\alpha(\text{L})=670$ 11; $\alpha(\text{M})=167$ 3 $\alpha(\text{N})=38.8$ 7; $\alpha(\text{O})=5.03$ 9; $\alpha(\text{P})=0.00307$ 5 B(E2)(W.u.)= 5.8×10^2 4 Mult.: $(\text{ce}(\text{L})\text{exp}/\text{ce}(\text{M}+\text{N}))\text{exp}=2.3$ 6, $(\text{ce}(\text{L}2)/\text{ce}(\text{L}3))\text{exp}=0.77$ (1972Ad12).
219.86	11/2 ⁻	146.6 3	100	73.16	9/2 ⁻	M1+E2	+0.24 11	1.43 4	$\alpha(\text{K})=1.17$ 5; $\alpha(\text{L})=0.201$ 11; $\alpha(\text{M})=0.046$ 3 $\alpha(\text{N})=0.0110$ 7; $\alpha(\text{O})=0.00171$ 8; $\alpha(\text{P})=0.000109$ 5 Mult., δ : $A_2=0.11$ 5 (1970Sk04); $A_2=-0.04$ 5 (2000Da09).
245.9	9/2 ⁻	59.7 5	100	186.16	5/2 ⁻	[E2]		32.4 15	$\alpha(\text{L})=24.6$ 11; $\alpha(\text{M})=6.2$ 3 $\alpha(\text{N})=1.44$ 7; $\alpha(\text{O})=0.188$ 9; $\alpha(\text{P})=0.000221$ 6 E_γ : From 1973Sc20, but uncertainty assigned by the evaluator.
288.48	11/2 ⁺	157.3 3	100 20	130.98	9/2 ⁺	(M1+E2)		1.200 18	$\alpha(\text{K})=0.999$ 15; $\alpha(\text{L})=0.1565$ 24; $\alpha(\text{M})=0.0355$ 6 $\alpha(\text{N})=0.00849$ 13; $\alpha(\text{O})=0.001344$ 21; $\alpha(\text{P})=9.32\times 10^{-5}$ 14 Mult.: $A_2=0.18$ 5 (2000Da09). δ : 0.45 8 (2000Da09) and 0.68 8 (1995Ar18), assuming $K=7/2$. $\alpha(\text{K})=0.0620$ 9; $\alpha(\text{L})=0.0230$ 4; $\alpha(\text{M})=0.00560$ 9 $\alpha(\text{N})=0.001318$ 20; $\alpha(\text{O})=0.000185$ 3; $\alpha(\text{P})=4.86\times 10^{-6}$ 7 Mult.: $A_2=0.13$ 5 (2000Da09); $A_2=0.32$ 13, $A_4=-0.30$ 18 (1970Sk04).
300.81	9/2 ⁺	128.6 3	100 8	172.25	7/2 ⁺	M1+E2	+0.19 8	2.10 4	$\alpha(\text{K})=1.72$ 5; $\alpha(\text{L})=0.291$ 14; $\alpha(\text{M})=0.067$ 4 $\alpha(\text{N})=0.0159$ 9; $\alpha(\text{O})=0.00248$ 11; $\alpha(\text{P})=0.000161$ 5 Mult., δ : $A_2=0.03$ 5 (1970Sk04). Other: $\delta=0.16$ 1 (2000Da09) and 0.26 4 (1995Ar18), assuming $K=5/2$. $\alpha(\text{K})=0.1146$ 17; $\alpha(\text{L})=0.0556$ 9; $\alpha(\text{M})=0.01366$ 21 $\alpha(\text{N})=0.00321$ 5; $\alpha(\text{O})=0.000442$ 7; $\alpha(\text{P})=8.57\times 10^{-6}$ 13 Mult.: $A_2=0.25$ 30 (1970Sk04).
372.58	3/2 ⁻	155.95 [‡] 9	49.4 [‡] 25	216.63	1/2 ⁻	M1+E2	0.61 6	1.09 3	$\alpha(\text{K})=0.83$ 3; $\alpha(\text{L})=0.194$ 6; $\alpha(\text{M})=0.0457$ 15 $\alpha(\text{N})=0.0108$ 4; $\alpha(\text{O})=0.00161$ 4; $\alpha(\text{P})=7.6\times 10^{-5}$ 3 B(M1)(W.u.)>0.0072; B(E2)(W.u.)>43 Mult., δ : $\alpha(\text{K})\text{exp}=0.63$ 13, $\alpha(\text{L})\text{exp}=0.17$ 6, $(\text{ce}(\text{L}1):\text{ce}(\text{L}2):\text{ce}(\text{L}3))\text{exp}=1.0:0.5:0.3$ (1972Ad12); $\alpha(\text{K})\text{exp}=0.50$ 15 (1967Hu02). $\alpha(\text{K})=0.58$ 5; $\alpha(\text{L})=0.100$ 4; $\alpha(\text{M})=0.0231$ 12 $\alpha(\text{N})=0.0055$ 3; $\alpha(\text{O})=0.000854$ 25; $\alpha(\text{P})=5.3\times 10^{-5}$ 5 Mult., δ : $\alpha(\text{K})\text{exp}\approx 0.57$, $\alpha(\text{L})\text{exp}\approx 0.093$; $(\text{ce}(\text{L}1)+\text{ce}(\text{L}2)):\text{ce}(\text{L}3)\text{exp}=1.1$. (1972Ad12); $\alpha(\text{K})\text{exp}$ (186 γ doublet)=0.35 7 (1967Hu02).
391.52	13/2 ⁻	171.6 3	100 3	219.86	11/2 ⁻	M1+E2	+0.23 10	0.92 3	$\alpha(\text{K})=0.76$ 3; $\alpha(\text{L})=0.126$ 4; $\alpha(\text{M})=0.0287$ 10

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\delta^\#$	$\alpha^@$	Comments
									$\alpha(\text{N})=0.00686$ 23; $\alpha(\text{O})=0.00107$ 3; $\alpha(\text{P})=7.0\times 10^{-5}$ 3 Mult., δ : $A_2=0.11$ 5 (1970Sk04). Other: $A_2=-0.01$ 5 (2000Da09), $\delta=0.26$ 2 (2000Da09) and 0.25 3 (1995Ar18), assuming $K=9/2$. $\alpha(\text{K})=0.0478$ 7; $\alpha(\text{L})=0.01605$ 24; $\alpha(\text{M})=0.00388$ 6 $\alpha(\text{N})=0.000914$ 14; $\alpha(\text{O})=0.0001295$ 19; $\alpha(\text{P})=3.81\times 10^{-6}$ 6 Mult.: $A_2=0.17$ 13 (1970Sk04) and $A_2=0.13$ 14 (2000Da09). $\alpha(\text{K})=0.324$ 5; $\alpha(\text{L})=0.280$ 5; $\alpha(\text{M})=0.0696$ 12 $\alpha(\text{N})=0.0163$ 3; $\alpha(\text{O})=0.00219$ 4; $\alpha(\text{P})=2.25\times 10^{-5}$ 4 Mult.: $A_2=0.31$ 3, $A_4=-0.11$ 4 (1970Sk04), and $A_2=0.18$ 5 (2000Da09).
391.52	13/2 ⁻	318.3 3	22 3	73.16	9/2 ⁻	E2		0.0688	
402.4	13/2 ⁻	156.6 3	100	245.9	9/2 ⁻	E2		0.692 11	
454.97	11/2 ⁺	154.0 3	100 15	300.81	9/2 ⁺	M1+E2	+0.22 12	1.25 4	$\alpha(\text{K})=1.03$ 5; $\alpha(\text{L})=0.172$ 9; $\alpha(\text{M})=0.0394$ 23 $\alpha(\text{N})=0.0094$ 6; $\alpha(\text{O})=0.00147$ 6; $\alpha(\text{P})=9.5\times 10^{-5}$ 5 Mult., δ : $A_2=0.08$ 7 (1970Sk04). Other: $\delta=0.17$ 2 (2000Da09) and 0.17 2 (1995Ar18), assuming $K=5/2$. $\alpha(\text{K})=0.0655$ 10; $\alpha(\text{L})=0.0249$ 4; $\alpha(\text{M})=0.00605$ 9 $\alpha(\text{N})=0.001424$ 21; $\alpha(\text{O})=0.000200$ 3; $\alpha(\text{P})=5.11\times 10^{-6}$ 8 Mult.: $A_2=0.53$ 20 (1970Sk04). $\alpha(\text{K})=0.55$ 9; $\alpha(\text{L})=0.115$ 8; $\alpha(\text{M})=0.0269$ 24 $\alpha(\text{N})=0.0064$ 6; $\alpha(\text{O})=0.00096$ 5; $\alpha(\text{P})=5.0\times 10^{-5}$ 9 Mult., δ : $A_2=0.45$ 10 (1970Sk04). Other: $\delta=0.43$ 3 (2000Da09) and 0.49 3 (1995Ar18), assuming $K=7/2$. $\alpha(\text{K})=0.0404$ 6; $\alpha(\text{L})=0.01273$ 19; $\alpha(\text{M})=0.00307$ 5 $\alpha(\text{N})=0.000723$ 11; $\alpha(\text{O})=0.0001030$ 15; $\alpha(\text{P})=3.26\times 10^{-6}$ 5 Mult.: $A_2=0.25$ 9, $A_4=0.06$ 12 (1970Sk04); $A_2=0.43$ 10 (2000Da09).
		282.8 3	42 5	172.25	7/2 ⁺	E2		0.0981	
470.52	13/2 ⁺	182.0 3	62 4	288.48	11/2 ⁺	M1+E2	+0.6 3	0.69 8	
		339.5 3	100 9	130.98	9/2 ⁺	E2		0.0571	
487.63	1/2 ⁺	115.05 [‡] 5	100 [‡]	372.58	3/2 ⁻	E1		0.255	$\alpha(\text{K})=0.209$ 3; $\alpha(\text{L})=0.0352$ 5; $\alpha(\text{M})=0.00799$ 12 $\alpha(\text{N})=0.00188$ 3; $\alpha(\text{O})=0.000277$ 4; $\alpha(\text{P})=1.417\times 10^{-5}$ 20 $B(\text{E}1)(\text{W.u.})=2.2\times 10^{-6}$ 3 Mult.: $(\text{ce}(\text{L}1)/\text{ce}(\text{L}3))\text{exp}\approx 3.9$ (1972Ad12) and $\alpha(\text{K})\text{exp}$ (115 γ doublet)=0.29 9 (1967Hu02). $\alpha(\text{K})=0.0237$ 4; $\alpha(\text{L})=0.00363$ 5; $\alpha(\text{M})=0.000820$ 12 $\alpha(\text{N})=0.000194$ 3; $\alpha(\text{O})=2.98\times 10^{-5}$ 5; $\alpha(\text{P})=1.79\times 10^{-6}$ 3 $B(\text{E}1)(\text{W.u.})=7.7\times 10^{-8}$ 10 Mult.: $\alpha(\text{K})\text{exp}=0.0235$ was used for normalizing of the ce intensities in 1972Ad12. See 1972Ad12 for details. $\alpha(\text{L}1)\text{exp}$ <0.002 (1972Ad12). $\alpha(\text{K})=0.0240$ 4; $\alpha(\text{L})=0.00630$ 9; $\alpha(\text{M})=0.001501$ 21 $\alpha(\text{N})=0.000355$ 5; $\alpha(\text{O})=5.15\times 10^{-5}$ 8; $\alpha(\text{P})=1.99\times 10^{-6}$ 3 $B(\text{E}2)(\text{W.u.})=0.0085$ 11 Mult.: $\alpha(\text{K})\text{exp}=0.026$ 3 (1972Ad12) and $\alpha(\text{K})\text{exp}=0.025$ 5 (1967Hu02).
		271.02 [‡] 9	46.2 [‡] 15	216.63	1/2 ⁻	E1		0.0283	
		417.16 [‡] 5	72 [‡] 4	70.48	5/2 ⁺	E2		0.0322	
497.42	3/2 ⁺	(9.80 [‡] 9)	0.21 [‡] 4	487.63	1/2 ⁺	[M1]		158 5	$\alpha(\text{M})=123$ 4

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\delta^\#$	$\alpha^@$	Comments
497.42	3/2 ⁺	280.80 $\frac{+}{-}$ 9	6.6 $\frac{+}{-}$ 7	216.63	1/2 ⁻	(E1)		0.0260	$\alpha(\text{N})=29.5$ 10; $\alpha(\text{O})=4.66$ 15; $\alpha(\text{P})=0.321$ 10 B(M1)(W.u.)=0.070 12
									$\alpha(\text{K})=0.0217$ 3; $\alpha(\text{L})=0.00332$ 5; $\alpha(\text{M})=0.000749$ 11 $\alpha(\text{N})=0.0001776$ 25; $\alpha(\text{O})=2.73\times 10^{-5}$ 4; $\alpha(\text{P})=1.648\times 10^{-6}$ 24 B(E1)(W.u.)=9.2 $\times 10^{-7}$ 12 Mult.: $\alpha(\text{K})\text{exp}<0.056$ (1972Ad12).
		311.28 $\frac{+}{-}$ 9	10.4 $\frac{+}{-}$ 11	186.16	5/2 ⁻	E1		0.0202	$\alpha(\text{K})=0.01692$ 24; $\alpha(\text{L})=0.00257$ 4; $\alpha(\text{M})=0.000579$ 9 $\alpha(\text{N})=0.0001374$ 20; $\alpha(\text{O})=2.12\times 10^{-5}$ 3; $\alpha(\text{P})=1.298\times 10^{-6}$ 19 B(E1)(W.u.)=1.06 $\times 10^{-6}$ 13 Mult.: $\alpha(\text{K})\text{exp}\approx 0.0118$ 12 (1972Ad12).
		426.98 $\frac{+}{-}$ 5	100 $\frac{+}{-}$ 5	70.48	5/2 ⁺	M1		0.0787	$\alpha(\text{K})=0.0658$ 10; $\alpha(\text{L})=0.01007$ 14; $\alpha(\text{M})=0.00228$ 4 $\alpha(\text{N})=0.000545$ 8; $\alpha(\text{O})=8.64\times 10^{-5}$ 13; $\alpha(\text{P})=6.04\times 10^{-6}$ 9 B(M1)(W.u.)=0.00041 3 Mult.: $\alpha(\text{K})\text{exp}=0.071$ 8, $\alpha(\text{L})\text{exp}=0.0110$ 13, $\alpha(\text{M})\text{exp}=0.00183$ 8 (1972Ad12); $\alpha(\text{K})\text{exp}=0.071$ 10 (1967Hu02).
573.14	(1/2) ⁺	502.4 $\frac{+}{-}$ 3	100 $\frac{+}{-}$	70.48	5/2 ⁺	E2		0.0199	$\alpha(\text{K})=0.01535$ 22; $\alpha(\text{L})=0.00351$ 5; $\alpha(\text{M})=0.000828$ 12 $\alpha(\text{N})=0.000196$ 3; $\alpha(\text{O})=2.89\times 10^{-5}$ 4; $\alpha(\text{P})=1.294\times 10^{-6}$ 19 Mult.: $\alpha(\text{K})\text{exp}=0.0160$ 34 (1972Ad12).
586.78	15/2 ⁻	195.3 3	100 2	391.52	13/2 ⁻	M1+E2	+0.25 12	0.635 23	$\alpha(\text{K})=0.524$ 24; $\alpha(\text{L})=0.0865$ 20; $\alpha(\text{M})=0.0197$ 6 $\alpha(\text{N})=0.00472$ 13; $\alpha(\text{O})=0.000739$ 14; $\alpha(\text{P})=4.85\times 10^{-5}$ 25 Mult.: $A_2=-0.03$ 7 and $\alpha(\text{K})\text{exp}=0.39$ 9 (2000Da09). Approximately 84% 195.3 γ and 16% 199.9 γ ; $A_2=0.14$ 7 (1970Sk04).
		367.0 3	31 4	219.86	11/2 ⁻	E2		0.0457	δ : From $A_2=0.14$ 7 (1970Sk04). Other: 0.21 2 (2000Da09) and 0.20 1 (1995Ar18), assuming K=9/2. $\alpha(\text{K})=0.0331$ 5; $\alpha(\text{L})=0.00970$ 14; $\alpha(\text{M})=0.00233$ 4 $\alpha(\text{N})=0.000549$ 8; $\alpha(\text{O})=7.87\times 10^{-5}$ 12; $\alpha(\text{P})=2.70\times 10^{-6}$ 4 Mult.: $A_2=0.26$ 6 (2000Da09).
632.93	13/2 ⁺	177.9 3	100 12	454.97	11/2 ⁺	M1+E2	+0.14 16	0.84 3	$\alpha(\text{K})=0.70$ 4; $\alpha(\text{L})=0.112$ 4; $\alpha(\text{M})=0.0254$ 11 $\alpha(\text{N})=0.00606$ 24; $\alpha(\text{O})=0.000956$ 25; $\alpha(\text{P})=6.5\times 10^{-5}$ 4 Mult., δ : $A_2=-0.02$ 14 (1970Sk04). Other: $A_2=0.01$ 13 (2000Da09), $\delta=0.12$ 1 (2000Da09) and 0.16 1 (1995Ar18), assuming K=5/2.
		332.1 3	40 8	300.81	9/2 ⁺	E2		0.0608	$\alpha(\text{K})=0.0428$ 6; $\alpha(\text{L})=0.01377$ 20; $\alpha(\text{M})=0.00332$ 5 $\alpha(\text{N})=0.000783$ 12; $\alpha(\text{O})=0.0001113$ 16; $\alpha(\text{P})=3.44\times 10^{-6}$ 5 Mult.: $A_2=0.23$ 17 (1970Sk04).
639.96	5/2 ⁺	142.60 $\frac{+}{-}$ 5	100 $\frac{+}{-}$ 7	497.42	3/2 ⁺	M1+E2	0.57 21	1.43 9	$\alpha(\text{K})=1.10$ 13; $\alpha(\text{L})=0.26$ 3; $\alpha(\text{M})=0.061$ 8 $\alpha(\text{N})=0.0145$ 18; $\alpha(\text{O})=0.00215$ 21; $\alpha(\text{P})=0.000100$ 13 Mult., δ : $\alpha(\text{K})\text{exp}=1.10$ 14, $\alpha(\text{L})\text{exp}=0.26$ 5 (1972Ad12).
		152.23 $\frac{+}{-}$ 9	14 $\frac{+}{-}$ 5	487.63	1/2 ⁺	[E2]		0.765	$\alpha(\text{K})=0.349$ 5; $\alpha(\text{L})=0.316$ 5; $\alpha(\text{M})=0.0789$ 12 $\alpha(\text{N})=0.0185$ 3; $\alpha(\text{O})=0.00248$ 4; $\alpha(\text{P})=2.41\times 10^{-5}$ 4
		467.5 $\frac{+}{-}$ 3	52.4 $\frac{+}{-}$ 24	172.25	7/2 ⁺	M1		0.0621	$\alpha(\text{K})=0.0519$ 8; $\alpha(\text{L})=0.00792$ 12; $\alpha(\text{M})=0.00179$ 3

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)									Comments
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\delta^\#$	$\alpha^@$	
659.4	17/2 ⁻	256.7 3	100	402.4	13/2 ⁻	E2		0.1323	$\alpha(\text{N})=0.000428$ 6; $\alpha(\text{O})=6.80\times 10^{-5}$ 10; $\alpha(\text{P})=4.76\times 10^{-6}$ 7 Mult.: $\alpha(\text{K})_{\text{exp}}=0.052$ 14 (1972Ad12). $\alpha(\text{K})=0.0851$ 13; $\alpha(\text{L})=0.0361$ 6; $\alpha(\text{M})=0.00882$ 13 $\alpha(\text{N})=0.00207$ 3; $\alpha(\text{O})=0.000288$ 5; $\alpha(\text{P})=6.51\times 10^{-6}$ 10 Mult.: $A_2=0.29$ 25, $A_4=-0.15$ 34 (1970Sk04); $A_2=0.23$ 4 (2000Da09).
675.44	15/2 ⁺	204.9 3	48 6	470.52	13/2 ⁺	(M1+E2)		0.573 9	$\alpha(\text{K})=0.477$ 7; $\alpha(\text{L})=0.0744$ 11; $\alpha(\text{M})=0.01687$ 25 $\alpha(\text{N})=0.00404$ 6; $\alpha(\text{O})=0.000639$ 10; $\alpha(\text{P})=4.44\times 10^{-5}$ 7 Mult.: $A_2=0.13$ 18, but the value overlaps with that for the 204.7 γ (2000Da09). δ : 0.37 3 (2000Da09) and 0.43 3 (1995Ar18), assuming $K=7/2$. $\alpha(\text{K})=0.0289$ 4; $\alpha(\text{L})=0.00809$ 12; $\alpha(\text{M})=0.00193$ 3 $\alpha(\text{N})=0.000457$ 7; $\alpha(\text{O})=6.59\times 10^{-5}$ 10; $\alpha(\text{P})=2.38\times 10^{-6}$ 4 Mult.: $A_2=0.49$ 18 (1970Sk04) and $A_2=0.22$ 5 (2000Da09).
690.31	(3/2) ⁻	317.75 [‡] 9	44 [‡] 5	372.58	3/2 ⁻	M1+E2	0.6 4	0.145 25	$\alpha(\text{K})=0.119$ 23; $\alpha(\text{L})=0.0206$ 15; $\alpha(\text{M})=0.0047$ 3 $\alpha(\text{N})=0.00113$ 7; $\alpha(\text{O})=0.000175$ 15; $\alpha(\text{P})=1.08\times 10^{-5}$ 23 Mult.: δ : $\alpha(\text{K})_{\text{exp}}=0.12$ 2 (1972Ad12).
737.4	(11/2 ⁻)	473.5 [‡] 2 504.2 [‡] 4 335.0 3 491 1	100.0 [‡] 25 10.0 [‡] 25 67 27 100 20	216.63 186.16 402.4 245.9	1/2 ⁻ 5/2 ⁻ 13/2 ⁻ 9/2 ⁻				
804.91	17/2 ⁻	218.1 3	100.0 23	586.78	15/2 ⁻	M1+E2	+0.25 12	0.467 18	$\alpha(\text{K})=0.386$ 18; $\alpha(\text{L})=0.0629$ 10; $\alpha(\text{M})=0.0143$ 3 $\alpha(\text{N})=0.00343$ 7; $\alpha(\text{O})=0.000538$ 8; $\alpha(\text{P})=3.57\times 10^{-5}$ 18 Mult.: $A_2=-0.02$ 4, $\alpha(\text{K})_{\text{exp}}=0.48$ 7 and $\alpha(\text{L})_{\text{exp}}=0.091$ 24 (2000Da09); $A_2=0.15$ 8 (1970Sk04). δ : From $\gamma(\theta)$ in 1970Sk04. Other: 0.18 1 (2000Da09) and 0.21 1 (1995Ar18), assuming $K=9/2$. $\alpha(\text{K})=0.0245$ 4; $\alpha(\text{L})=0.00649$ 10; $\alpha(\text{M})=0.001547$ 22 $\alpha(\text{N})=0.000366$ 6; $\alpha(\text{O})=5.30\times 10^{-5}$ 8; $\alpha(\text{P})=2.03\times 10^{-6}$ 3 Mult.: $A_2=0.13$ 5 and $\alpha(\text{K})_{\text{exp}}=0.023$ 10 (2000Da09); $A_2=0.16$ 9 (1970Sk04).
833.5	15/2 ⁺	200.6 3	100 13	632.93	13/2 ⁺	M1+E2		0.608	$\alpha(\text{K})=0.506$ 8; $\alpha(\text{L})=0.0790$ 12; $\alpha(\text{M})=0.0179$ 3 $\alpha(\text{N})=0.00428$ 7; $\alpha(\text{O})=0.000678$ 10; $\alpha(\text{P})=4.71\times 10^{-5}$ 7 Mult.: $A_2=0.08$ 39 (2000Da09) and $A_2=-0.04$ 12 (1970Sk04). δ : 0.12 1 (2000Da09) and 0.13 1 (1995Ar18), assuming $K=9/2$. $\alpha(\text{K})=0.0306$ 5; $\alpha(\text{L})=0.00872$ 13; $\alpha(\text{M})=0.00209$ 3 $\alpha(\text{N})=0.000493$ 7; $\alpha(\text{O})=7.10\times 10^{-5}$ 11; $\alpha(\text{P})=2.50\times 10^{-6}$ 4
864.93	3/2 ⁺	224.99 [‡] 3	12.6 [‡] 18	639.96	5/2 ⁺	M1+E2	2.3 4	0.240 15	$\alpha(\text{K})=0.161$ 15; $\alpha(\text{L})=0.0603$ 9; $\alpha(\text{M})=0.01465$ 24 $\alpha(\text{N})=0.00345$ 6; $\alpha(\text{O})=0.000485$ 7; $\alpha(\text{P})=1.31\times 10^{-5}$ 15 Mult.: δ : $\alpha(\text{K})_{\text{exp}}=0.16$ 3 (1972Ad12).
		367.52 [‡] 4	91 [‡] 5	497.42	3/2 ⁺	M1		0.1171	$\alpha(\text{K})=0.0977$ 14; $\alpha(\text{L})=0.01502$ 21; $\alpha(\text{M})=0.00340$ 5 $\alpha(\text{N})=0.000813$ 12; $\alpha(\text{O})=0.0001290$ 18; $\alpha(\text{P})=9.00\times 10^{-6}$ 13

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)									Comments
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\delta^\#$	$\alpha^@$	
864.93	3/2 ⁺	377.35 [‡] 5	100 [‡] 5	487.63	1/2 ⁺	M1		0.1092	Mult.: $\alpha(\text{K})_{\text{exp}}=0.10$ 1 and $\alpha(\text{L})_{\text{exp}}\approx 0.019$ (1972Ad12); $\alpha(\text{K})_{\text{exp}}=0.133$ 25 (1967Hu02). $\alpha(\text{K})=0.0911$ 13; $\alpha(\text{L})=0.01400$ 20; $\alpha(\text{M})=0.00317$ 5 $\alpha(\text{N})=0.000758$ 11; $\alpha(\text{O})=0.0001202$ 17; $\alpha(\text{P})=8.39\times 10^{-6}$ 12
		793.6 [‡] 4	12.6 [‡] 14	70.48	5/2 ⁺	M1(+E2)		0.01599	Mult.: $\alpha(\text{K})_{\text{exp}}=0.098$ 6, $\alpha(\text{L})_{\text{exp}}=0.0176$ 20 (1972Ad12); $\alpha(\text{K})_{\text{exp}}=0.093$ 30 (1967Hu02). $\alpha(\text{K})=0.01340$ 19; $\alpha(\text{L})=0.00201$ 3; $\alpha(\text{M})=0.000453$ 7 $\alpha(\text{N})=0.0001084$ 16; $\alpha(\text{O})=1.723\times 10^{-5}$ 25; $\alpha(\text{P})=1.216\times 10^{-6}$ 17
899.24	11/2 ⁻	507.7 3	49 8	391.52	13/2 ⁻	M1		0.0501	Mult.: $\alpha(\text{K})_{\text{exp}}=0.013$ 3 (1972Ad12). $\alpha(\text{K})=0.0419$ 6; $\alpha(\text{L})=0.00637$ 9; $\alpha(\text{M})=0.001440$ 21 $\alpha(\text{N})=0.000345$ 5; $\alpha(\text{O})=5.47\times 10^{-5}$ 8; $\alpha(\text{P})=3.83\times 10^{-6}$ 6 B(M1)(W.u.) $>2.2\times 10^{-5}$ Mult.: $A_2=0.11$ 7. The value overlaps with that for the 507.3 γ . $\alpha(\text{K})_{\text{exp}}=0.020$ 10 (2000Da09).
		610.7 3	39 10	288.48	11/2 ⁺	[E1]		0.00447	$\alpha(\text{K})=0.00377$ 6; $\alpha(\text{L})=0.000545$ 8; $\alpha(\text{M})=0.0001224$ 18 $\alpha(\text{N})=2.91\times 10^{-5}$ 4; $\alpha(\text{O})=4.56\times 10^{-6}$ 7; $\alpha(\text{P})=3.03\times 10^{-7}$ 5 B(E1)(W.u.) $>9.7\times 10^{-8}$
		679.3 3	100 16	219.86	11/2 ⁻	M1(+E2)		0.0237	$\alpha(\text{K})=0.0198$ 3; $\alpha(\text{L})=0.00299$ 5; $\alpha(\text{M})=0.000675$ 10 $\alpha(\text{N})=0.0001615$ 23; $\alpha(\text{O})=2.57\times 10^{-5}$ 4; $\alpha(\text{P})=1.81\times 10^{-6}$ 3 Mult.: $A_2=0.17$ 9 (2000Da09), consistent with J to J transition. The value overlaps with that for the 678.6 γ . $\alpha(\text{K})_{\text{exp}}<0.006$ (2000Da09).
		768.7 3	7.8 20	130.98	9/2 ⁺	[E1]		0.00282	$\alpha(\text{K})=0.00238$ 4; $\alpha(\text{L})=0.000339$ 5; $\alpha(\text{M})=7.60\times 10^{-5}$ 11 $\alpha(\text{N})=1.81\times 10^{-5}$ 3; $\alpha(\text{O})=2.85\times 10^{-6}$ 4; $\alpha(\text{P})=1.93\times 10^{-7}$ 3 B(E1)(W.u.) $>9.7\times 10^{-9}$
		826.0 3	69 8	73.16	9/2 ⁻	M1		0.01446	$\alpha(\text{K})=0.01212$ 17; $\alpha(\text{L})=0.00181$ 3; $\alpha(\text{M})=0.000409$ 6 $\alpha(\text{N})=9.79\times 10^{-5}$ 14; $\alpha(\text{O})=1.556\times 10^{-5}$ 22; $\alpha(\text{P})=1.099\times 10^{-6}$ 16 B(M1)(W.u.) $>7.1\times 10^{-6}$
901.45	17/2 ⁺	226.0 3	31 5	675.44	15/2 ⁺	M1+E2	+0.7 4		Mult.: $A_2=-0.15$ 16 (2000Da09). Mult.: $A_2=0.42$ 24 (2000Da09). The value overlaps with that for the 226.2 γ and 226.9 γ . $A_2=0.55$ 21 (1970Sk04). δ : From $\gamma(\theta)$ in 1970Sk04. Others: 0.37 3 (2000Da09), 0.39 3 (1995Ar18), 0.29 2 (1970Sk04) and 0.56 12 (1970Ba46) assuming $K=7/2$.
948.21	(5/2) ⁺	431.0 3	100 5	470.52	13/2 ⁺	E2			Mult.: $A_2=0.14$ 52 (2000Da09) and $A_2=0.25$ 12 (1970Sk04). $\alpha(\text{K})=0.139$ 18; $\alpha(\text{L})=0.0232$ 11; $\alpha(\text{M})=0.00529$ 20 $\alpha(\text{N})=0.00126$ 5; $\alpha(\text{O})=0.000197$ 11; $\alpha(\text{P})=1.28\times 10^{-5}$ 17
		308.25 [‡] 9	71 [‡] 10	639.96	5/2 ⁺	M1(+E2)	≤ 0.7	0.169 19	Mult.: $\alpha(\text{K})_{\text{exp}}=0.149$ 25 (1972Ad12). $\alpha(\text{K})=0.0571$ 8; $\alpha(\text{L})=0.00873$ 13; $\alpha(\text{M})=0.00197$ 3 $\alpha(\text{N})=0.000472$ 7; $\alpha(\text{O})=7.49\times 10^{-5}$ 11; $\alpha(\text{P})=5.24\times 10^{-6}$ 8
		450.6 [‡] 2	100.0 [‡] 25	497.42	3/2 ⁺	M1		0.0684	Mult.: $\alpha(\text{K})_{\text{exp}}=0.063$ 13, $\alpha(\text{L})_{\text{exp}}<0.013$ (1972Ad12). $\alpha(\text{K})=0.0367$ 6; $\alpha(\text{L})=0.01118$ 16; $\alpha(\text{M})=0.00269$ 4
1011.7	21/2 ⁻	352.3 3	100	659.4	17/2 ⁻	E2		0.0513	

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)									Comments
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\delta^\#$	$\alpha^@$	
									$\alpha(\text{N})=0.000634$ 9; $\alpha(\text{O})=9.06\times 10^{-5}$ 13; $\alpha(\text{P})=2.98\times 10^{-6}$ 5 Mult.: $A_2=0.20$ 4 and $\alpha(\text{K})_{\text{exp}}=0.028$ 3 (2000Da09); $A_2=0.38$ 10, $A_4=-0.08$ 14 (1970Sk04); $A_2=0.303$ 12, $A_4=-0.068$ 20 (1982Ao02).
1029.2	(15/2 ⁻)	292 1 369.6 3 627.0 3	64 21 57 29 100 36	737.4 (11/2 ⁻) 659.4 17/2 ⁻ 402.4 13/2 ⁻					
1043.50	19/2 ⁻	238.7 3	100 5	804.91 17/2 ⁻		M1+E2	+0.21 6	0.367 8	$\alpha(\text{K})=0.304$ 7; $\alpha(\text{L})=0.0487$ 7; $\alpha(\text{M})=0.01107$ 16 $\alpha(\text{N})=0.00265$ 4; $\alpha(\text{O})=0.000417$ 6; $\alpha(\text{P})=2.82\times 10^{-5}$ 7 Mult., δ : $A_2=0.10$ 5 (1970Sk04). Other: $A_2=-0.06$ 6 (2000Da09), $\delta=0.18$ 1 (2000Da09) and 0.20 1 (1995Ar18), assuming $K=9/2$.
		456.7 3	62 8	586.78 15/2 ⁻		E2		0.0254	$\alpha(\text{K})=0.0192$ 3; $\alpha(\text{L})=0.00471$ 7; $\alpha(\text{M})=0.001117$ 16 $\alpha(\text{N})=0.000264$ 4; $\alpha(\text{O})=3.87\times 10^{-5}$ 6; $\alpha(\text{P})=1.610\times 10^{-6}$ 23 Mult.: $A_2=0.17$ 6 and $\alpha(\text{K})_{\text{exp}}=0.014$ 9 (2000Da09); $A_2=0.19$ 9 (1970Sk04).
1044.95	3/2 ⁻	471.8 [‡] 1 672.15 [‡] 20	[‡] 100 [‡] 4	573.14 (1/2) ⁺ 372.58 3/2 ⁻		M1		0.0243	$\alpha(\text{K})=0.0204$ 3; $\alpha(\text{L})=0.00307$ 5; $\alpha(\text{M})=0.000694$ 10 $\alpha(\text{N})=0.0001660$ 24; $\alpha(\text{O})=2.64\times 10^{-5}$ 4; $\alpha(\text{P})=1.86\times 10^{-6}$ 3 Mult.: $\alpha(\text{K})_{\text{exp}}=0.025$ 3, $\alpha(\text{L})_{\text{exp}}=0.0025$ 8 (1972Ad12); $\alpha(\text{K})_{\text{exp}}=0.027$ 7 (1967Hu02).
		827.9 [‡] 4	53 [‡] 3	216.63 1/2 ⁻		M1		0.01437	$\alpha(\text{K})=0.01205$ 17; $\alpha(\text{L})=0.00180$ 3; $\alpha(\text{M})=0.000407$ 6 $\alpha(\text{N})=9.73\times 10^{-5}$ 14; $\alpha(\text{O})=1.547\times 10^{-5}$ 22; $\alpha(\text{P})=1.092\times 10^{-6}$ 16 Mult.: $\alpha(\text{K})_{\text{exp}}=0.013$ 3 (1972Ad12).
		858.4 [‡] 3	35.5 [‡] 25	186.16 5/2 ⁻		M1		0.01313	$\alpha(\text{K})=0.01101$ 16; $\alpha(\text{L})=0.001645$ 23; $\alpha(\text{M})=0.000371$ 6 $\alpha(\text{N})=8.88\times 10^{-5}$ 13; $\alpha(\text{O})=1.411\times 10^{-5}$ 20; $\alpha(\text{P})=9.97\times 10^{-7}$ 14 Mult.: $\alpha(\text{K})_{\text{exp}}=0.016$ 5 (1972Ad12).
1054.6	17/2 ⁺	221.2 3 421.7 3	100 13 81 16	833.5 15/2 ⁺ 632.93 13/2 ⁺		[M1+E2]			δ : 0.12 1 (2000Da09) and 0.13 1 (1995Ar18), assuming $K=5/2$.
1058.9	13/2 ⁻	159.7	100 21	899.24 11/2 ⁻		M1+E2		1.150	$\alpha(\text{K})=0.957$ 14; $\alpha(\text{L})=0.1499$ 21; $\alpha(\text{M})=0.0340$ 5 $\alpha(\text{N})=0.00813$ 12; $\alpha(\text{O})=0.001288$ 18; $\alpha(\text{P})=8.93\times 10^{-5}$ 13 Mult.: $A_2=0.12$ 14 (2000Da09).
		838.8 721.6 [‡] 3	18 3 97 [‡] 7	219.86 11/2 ⁻ 372.58 3/2 ⁻		M1		0.0203	$\alpha(\text{K})=0.01703$ 24; $\alpha(\text{L})=0.00256$ 4; $\alpha(\text{M})=0.000578$ 9 $\alpha(\text{N})=0.0001383$ 20; $\alpha(\text{O})=2.20\times 10^{-5}$ 3; $\alpha(\text{P})=1.548\times 10^{-6}$ 22 Mult.: $\alpha(\text{K})_{\text{exp}}=0.021$ 3 (1972Ad12).
		877.2 [‡] 4	100 [‡] 13	216.63 1/2 ⁻		M1		0.01243	$\alpha(\text{K})=0.01043$ 15; $\alpha(\text{L})=0.001558$ 22; $\alpha(\text{M})=0.000351$ 5 $\alpha(\text{N})=8.40\times 10^{-5}$ 12; $\alpha(\text{O})=1.336\times 10^{-5}$ 19; $\alpha(\text{P})=9.44\times 10^{-7}$ 14 Mult.: $\alpha(\text{K})_{\text{exp}}=0.015$ 3 (1972Ad12).
1146.7	19/2 ⁺	245.4 3	25 4	901.45 17/2 ⁺		M1+E2		0.349	$\alpha(\text{K})=0.290$ 5; $\alpha(\text{L})=0.0451$ 7; $\alpha(\text{M})=0.01022$ 15 $\alpha(\text{N})=0.00245$ 4; $\alpha(\text{O})=0.000388$ 6; $\alpha(\text{P})=2.69\times 10^{-5}$ 4

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)								
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\alpha^@$	Comments
								Mult.: $A_2=0.10$ 11 (2000Da09). δ : 0.34 3 (2000Da09) and 0.32 1 (1995Ar18), assuming $K=7/2$. $\alpha(K)=0.0179$ 3; $\alpha(L)=0.00427$ 6; $\alpha(M)=0.001011$ 15 $\alpha(N)=0.000239$ 4; $\alpha(O)=3.51\times 10^{-5}$ 5; $\alpha(P)=1.498\times 10^{-6}$ 21
1146.7	19/2 ⁺	471.2 3	100 8	675.44	15/2 ⁺	E2	0.0234	Mult.: $A_2=0.27$ 5 (2000Da09) and $A_2=0.28$ 25 (1970Sk04). δ : 0.54 12 (2000Da09), assuming $K=11/2$. $\alpha(K)=0.0402$ 6; $\alpha(L)=0.01265$ 19; $\alpha(M)=0.00305$ 5 $\alpha(N)=0.000719$ 11; $\alpha(O)=0.0001024$ 15; $\alpha(P)=3.24\times 10^{-6}$ 5 Mult.: $A_2=0.43$ 10 (2000Da09).
1239.16	15/2 ⁻	180.2 3 340.1 3	100 21 66 17	1058.9 899.24	13/2 ⁻ 11/2 ⁻	[M1+E2] (E2)	0.0568	
1253.32	3/2 ⁻	159.1 ‡ 1 304.3 ‡ 3 388.8 ‡ 1	1.3 ‡ 3 1.9 ‡ 6 16.4 ‡ 9	1094.20 948.21 864.93	(1/2) ⁻ (5/2) ⁺ 3/2 ⁺	E1	0.01199	$\alpha(K)=0.01005$ 14; $\alpha(L)=0.001501$ 21; $\alpha(M)=0.000338$ 5 $\alpha(N)=8.03\times 10^{-5}$ 12; $\alpha(O)=1.244\times 10^{-5}$ 18; $\alpha(P)=7.86\times 10^{-7}$ 11 Mult.: $\alpha(K)\text{exp}=0.0096$ 20 (1972Ad12).
		563.0 ‡ 4	1.4 ‡ 3	690.31	(3/2) ⁻	E0+M1+E2	0.089 21	$\alpha(K)=0.0321$ 5; $\alpha(L)=0.00486$ 7; $\alpha(M)=0.001098$ 16 $\alpha(N)=0.000263$ 4; $\alpha(O)=4.17\times 10^{-5}$ 6; $\alpha(P)=2.93\times 10^{-6}$ 5 α : $\alpha(K)\text{exp}$. Mult.: $\alpha(K)\text{exp}=0.089$ 21 (1972Ad12).
		880.2 ‡ 4	11.8 ‡ 16	372.58	3/2 ⁻	M1	0.01233	$\alpha(K)=0.01034$ 15; $\alpha(L)=0.001544$ 22; $\alpha(M)=0.000348$ 5 $\alpha(N)=8.33\times 10^{-5}$ 12; $\alpha(O)=1.324\times 10^{-5}$ 19; $\alpha(P)=9.36\times 10^{-7}$ 14 Mult.: $\alpha(K)\text{exp}=0.015$ 3 (1972Ad12).
		1036.4 ‡ 3	100.0 ‡ 19	216.63	1/2 ⁻	M1	0.00821	$\alpha(K)=0.00689$ 10; $\alpha(L)=0.001024$ 15; $\alpha(M)=0.000231$ 4 $\alpha(N)=5.52\times 10^{-5}$ 8; $\alpha(O)=8.78\times 10^{-6}$ 13; $\alpha(P)=6.22\times 10^{-7}$ 9 Mult.: $\alpha(K)\text{exp}=0.0074$ 8 and $\alpha(L)\text{exp}=0.0016$ 3 (1972Ad12). Other: $\alpha(K)\text{exp}=0.0048$ 6 (1967Hu02).
		1066.9 ‡ 3	30.2 ‡ 8	186.16	5/2 ⁻	M1	0.00764	$\alpha(K)=0.00641$ 9; $\alpha(L)=0.000952$ 14; $\alpha(M)=0.000214$ 3 $\alpha(N)=5.13\times 10^{-5}$ 8; $\alpha(O)=8.16\times 10^{-6}$ 12; $\alpha(P)=5.79\times 10^{-7}$ 9 Mult.: $\alpha(K)\text{exp}=0.0057$ 6 (1972Ad12). Other: $\alpha(K)\text{exp}=0.0048$ 11 (1967Hu02).
		1182.5 ‡ 3	36.2 ‡ 8	70.48	5/2 ⁺	E1	1.28×10^{-3}	$\alpha(K)=0.001071$ 15; $\alpha(L)=0.0001494$ 21; $\alpha(M)=3.34\times 10^{-5}$ 5 $\alpha(N)=7.96\times 10^{-6}$ 12; $\alpha(O)=1.259\times 10^{-6}$ 18; $\alpha(P)=8.77\times 10^{-8}$ 13; $\alpha(\text{IPF})=1.400\times 10^{-5}$ 22 Mult.: $\alpha(K)\text{exp}=0.00109$ 22 (1972Ad12).
1295.5	19/2 ⁺	1253.7 ‡ 4 240.9 3	1.42 ‡ 16 84 16	0.0 1054.6	7/2 ⁺ 17/2 ⁺	M1+E2	0.367	$\alpha(K)=0.305$ 5; $\alpha(L)=0.0475$ 7; $\alpha(M)=0.01076$ 16 $\alpha(N)=0.00257$ 4; $\alpha(O)=0.000408$ 6; $\alpha(P)=2.83\times 10^{-5}$ 4 Mult.: $A_2=0.01$ 10 (2000Da09).
		461.9 3	100 18	833.5	15/2 ⁺	(E2)	0.0246	δ : 0.12 2 (2000Da09) and 0.13 1 (1995Ar18), assuming $K=5/2$. $\alpha(K)=0.0187$ 3; $\alpha(L)=0.00455$ 7; $\alpha(M)=0.001077$ 16 $\alpha(N)=0.000255$ 4; $\alpha(O)=3.73\times 10^{-5}$ 6; $\alpha(P)=1.568\times 10^{-6}$ 22 Mult.: $A_2=0.16$ 6 (2000Da09).

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\delta^\#$	$\alpha^@$	Comments
1302.2	21/2 ⁻	258.7 3	100 5	1043.50	19/2 ⁻	M1+E2		0.302	$\alpha(\text{K})=0.251$ 4; $\alpha(\text{L})=0.0390$ 6; $\alpha(\text{M})=0.00884$ 13 $\alpha(\text{N})=0.00211$ 3; $\alpha(\text{O})=0.000335$ 5; $\alpha(\text{P})=2.33\times 10^{-5}$ 4 Mult.: $A_2=-0.02$ 7 (2000Da09) and $A_2=-0.1$ 5 (1970Sk04). δ : 0.17 1 (2000Da09) and 0.18 1 (1995Ar18), assuming $K=9/2$.
		497.3 3	80 9	804.91	17/2 ⁻	E2		0.0204	$\alpha(\text{K})=0.01572$ 23; $\alpha(\text{L})=0.00362$ 6; $\alpha(\text{M})=0.000854$ 12 $\alpha(\text{N})=0.000202$ 3; $\alpha(\text{O})=2.98\times 10^{-5}$ 5; $\alpha(\text{P})=1.324\times 10^{-6}$ 19 Mult.: $A_2=0.35$ 10 (2000Da09) and $A_2=0.38$ 26 (1970Sk04).
1354.8	21/2 ⁻	53 1	0.8 3	1302.2	21/2 ⁻	M1		4.7 3	$\alpha(\text{L})=3.64$ 22; $\alpha(\text{M})=0.83$ 5 $\alpha(\text{N})=0.197$ 12; $\alpha(\text{O})=0.0312$ 19; $\alpha(\text{P})=0.00216$ 13 $B(\text{M1})(\text{W.u.})=1.6\times 10^{-7}$ 6 Mult.: $\alpha(\text{exp})=11$ 6 (2000Da09).
		311.3 3	100.0 19	1043.50	19/2 ⁻	M1+E2	+0.29 +11-6	0.174 7	$\alpha(\text{K})=0.144$ 7; $\alpha(\text{L})=0.0231$ 5; $\alpha(\text{M})=0.00524$ 10 $\alpha(\text{N})=0.001252$ 25; $\alpha(\text{O})=0.000197$ 5; $\alpha(\text{P})=1.33\times 10^{-5}$ 7 $B(\text{M1})(\text{W.u.})=9.4\times 10^{-8}$ 7; $B(\text{E2})(\text{W.u.})=3.5\times 10^{-5}$ 25 Mult.: $\alpha(\text{K})\text{exp}=0.17$ 2 and $\alpha(\text{L})\text{exp}=0.030$ 9 (2000Da09). $A_2=0.16$ 4, $A_4=-0.20$ 6 (1970Sk04); $A_2=0.03$ 6, $A_4=0.08$ 8 (1975Ba13). $A_2=0.048$ 7, $A_4=-0.006$ 11 (1982Ao02,1982Ao04). $\alpha(\text{exp})=0.37$ 18 (1970Sk04) and $\alpha(\text{exp})=0.32$ 15 (1971Hu14). $\alpha(\text{K})\text{exp}=0.169$ 28 and $\alpha(\text{L})\text{exp}=0.0203$ 41 (1982Ao04).
		549.9 3	13.4 16	804.91	17/2 ⁻	E2		0.01595	δ : From $\gamma(\theta)$ in 1982Ao02 and 1982Ao04. $\alpha(\text{K})=0.01246$ 18; $\alpha(\text{L})=0.00269$ 4; $\alpha(\text{M})=0.000630$ 9 $\alpha(\text{N})=0.0001494$ 21; $\alpha(\text{O})=2.22\times 10^{-5}$ 4; $\alpha(\text{P})=1.057\times 10^{-6}$ 15 $B(\text{E2})(\text{W.u.})=3.6\times 10^{-6}$ 4 Mult.: $A_2=0.190$ 41, $A_4=-0.071$ 49 (1982Ao02,1982Ao04). $\alpha(\text{K})\text{exp}=0.0127$ 16 (1982Ao04).
1406.0	(19/2 ⁻)	377 1 394.2 3 746.7 3	77 31 85 31 100 23	1029.2 1011.7 659.4	(15/2 ⁻) 21/2 ⁻ 17/2 ⁻				
1408.8	21/2 ⁺	262.2 3	21 4	1146.7	19/2 ⁺	[M1+E2]		0.291 5	$\alpha(\text{K})=0.242$ 4; $\alpha(\text{L})=0.0376$ 6; $\alpha(\text{M})=0.00852$ 13 $\alpha(\text{N})=0.00204$ 3; $\alpha(\text{O})=0.000323$ 5; $\alpha(\text{P})=2.25\times 10^{-5}$ 4 δ : 0.33 3 (2000Da09) and 0.33 1 (1995Ar18), assuming $K=7/2$.
		507.3 3	100 4	901.45	17/2 ⁺	(E2)		0.0194	$\alpha(\text{K})=0.01500$ 22; $\alpha(\text{L})=0.00341$ 5; $\alpha(\text{M})=0.000803$ 12 $\alpha(\text{N})=0.000190$ 3; $\alpha(\text{O})=2.81\times 10^{-5}$ 4; $\alpha(\text{P})=1.266\times 10^{-6}$ 18 Mult.: $A_2=0.11$ 7 (2000Da09).
1431.6	17/2 ⁻	192.5 3	60 12	1239.16	15/2 ⁻	[M1+E2]		0.682	$\alpha(\text{K})=0.567$ 9; $\alpha(\text{L})=0.0886$ 13; $\alpha(\text{M})=0.0201$ 3 $\alpha(\text{N})=0.00481$ 7; $\alpha(\text{O})=0.000761$ 12; $\alpha(\text{P})=5.28\times 10^{-5}$ 8 δ : 0.56 10 (2000Da09), assuming $K=11/2$.
		372.7 3	100 16	1058.9	13/2 ⁻	[E2]		0.0438	$\alpha(\text{K})=0.0318$ 5; $\alpha(\text{L})=0.00920$ 14; $\alpha(\text{M})=0.00220$ 4 $\alpha(\text{N})=0.000520$ 8; $\alpha(\text{O})=7.47\times 10^{-5}$ 11; $\alpha(\text{P})=2.60\times 10^{-6}$ 4
1452.4	25/2 ⁻	440.6 3	100	1011.7	21/2 ⁻	E2		0.0279	$\alpha(\text{K})=0.0210$ 3; $\alpha(\text{L})=0.00528$ 8; $\alpha(\text{M})=0.001254$ 18 $\alpha(\text{N})=0.000297$ 5; $\alpha(\text{O})=4.33\times 10^{-5}$ 7; $\alpha(\text{P})=1.749\times 10^{-6}$ 25 Mult.: $A_2=0.19$ 3 (2000Da09).

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ [†]	I_γ [†]	E_f	J_f^π	Mult. [†]	$\delta^\#$	$\alpha^@$	Comments
1475.7	(17/2 ⁻)	889.0 3	100 15	586.78	15/2 ⁻	[M1]		0.01202	$\alpha(\text{K})=0.01008$ 15; $\alpha(\text{L})=0.001506$ 22; $\alpha(\text{M})=0.000340$ 5 $\alpha(\text{N})=8.12\times 10^{-5}$ 12; $\alpha(\text{O})=1.291\times 10^{-5}$ 19; $\alpha(\text{P})=9.13\times 10^{-7}$ 13 B(M1)(W.u.) $>1.5\times 10^{-5}$
		1084.0 3	51 15	391.52	13/2 ⁻	[E2]		0.00365	$\alpha(\text{K})=0.00302$ 5; $\alpha(\text{L})=0.000489$ 7; $\alpha(\text{M})=0.0001112$ 16 $\alpha(\text{N})=2.65\times 10^{-5}$ 4; $\alpha(\text{O})=4.12\times 10^{-6}$ 6; $\alpha(\text{P})=2.60\times 10^{-7}$ 4 B(E2)(W.u.) >0.0015
1476.53	(3/2 ⁻)	223.23 [‡] 3	100 [‡] 4	1253.32	3/2 ⁻	M1+E2	0.86 25	0.35 4	$\alpha(\text{K})=0.27$ 4; $\alpha(\text{L})=0.0604$ 11; $\alpha(\text{M})=0.0142$ 4 $\alpha(\text{N})=0.00337$ 9; $\alpha(\text{O})=0.000501$ 7; $\alpha(\text{P})=2.4\times 10^{-5}$ 4 Mult., δ : $\alpha(\text{K})\text{exp}=0.21$ 4 and $\alpha(\text{L})\text{exp}=0.052$ 8 (1972Ad12).
		382.3 [‡] 2	30.7 [‡] 22	1094.20	(1/2 ⁻)	M1		0.1054	$\alpha(\text{K})=0.0880$ 13; $\alpha(\text{L})=0.01352$ 19; $\alpha(\text{M})=0.00306$ 5 $\alpha(\text{N})=0.000732$ 11; $\alpha(\text{O})=0.0001161$ 17; $\alpha(\text{P})=8.10\times 10^{-6}$ 12 Mult.: $\alpha(\text{K})\text{exp}=0.124$ 15 (1972Ad12).
		431.45 [‡] 10	34 [‡] 4	1044.95	3/2 ⁻	[M1]		0.0766	$\alpha(\text{K})=0.0640$ 9; $\alpha(\text{L})=0.00979$ 14; $\alpha(\text{M})=0.00221$ 4 $\alpha(\text{N})=0.000530$ 8; $\alpha(\text{O})=8.41\times 10^{-5}$ 12; $\alpha(\text{P})=5.88\times 10^{-6}$ 9
		785.9 [‡] 4	47 [‡] 5	690.31	(3/2 ⁻)	M1		0.01638	$\alpha(\text{K})=0.01373$ 20; $\alpha(\text{L})=0.00206$ 3; $\alpha(\text{M})=0.000465$ 7 $\alpha(\text{N})=0.0001111$ 16; $\alpha(\text{O})=1.766\times 10^{-5}$ 25; $\alpha(\text{P})=1.246\times 10^{-6}$ 18 Mult.: $\alpha(\text{K})\text{exp}=0.014$ 3 (1972Ad12).
		1103.7 [‡] 4	12.4 [‡] 15	372.58	3/2 ⁻	[M1]		0.00703	$\alpha(\text{K})=0.00590$ 9; $\alpha(\text{L})=0.000875$ 13; $\alpha(\text{M})=0.000197$ 3 $\alpha(\text{N})=4.71\times 10^{-5}$ 7; $\alpha(\text{O})=7.50\times 10^{-6}$ 11; $\alpha(\text{P})=5.32\times 10^{-7}$ 8; $\alpha(\text{IPF})=3.39\times 10^{-7}$ 8
		1259.7 [‡] 4	5.8 [‡] 7	216.63	1/2 ⁻	[M1]		0.00509	$\alpha(\text{K})=0.00426$ 6; $\alpha(\text{L})=0.000630$ 9; $\alpha(\text{M})=0.0001417$ 20 $\alpha(\text{N})=3.39\times 10^{-5}$ 5; $\alpha(\text{O})=5.40\times 10^{-6}$ 8; $\alpha(\text{P})=3.84\times 10^{-7}$ 6; $\alpha(\text{IPF})=1.592\times 10^{-5}$ 24
		1290.1 [‡] 5	2.9 [‡] 7	186.16	5/2 ⁻	[M1]		0.00481	$\alpha(\text{K})=0.00402$ 6; $\alpha(\text{L})=0.000593$ 9; $\alpha(\text{M})=0.0001336$ 19 $\alpha(\text{N})=3.20\times 10^{-5}$ 5; $\alpha(\text{O})=5.09\times 10^{-6}$ 8; $\alpha(\text{P})=3.62\times 10^{-7}$ 5; $\alpha(\text{IPF})=2.20\times 10^{-5}$ 4
1476.56	(3/2 ⁺)	528.5 [‡] 2	40.0 [‡] 5	948.21	(5/2 ⁺)	(E2)		0.01757	$\alpha(\text{K})=0.01364$ 20; $\alpha(\text{L})=0.00302$ 5; $\alpha(\text{M})=0.000709$ 10 $\alpha(\text{N})=0.0001681$ 24; $\alpha(\text{O})=2.49\times 10^{-5}$ 4; $\alpha(\text{P})=1.155\times 10^{-6}$ 17 Mult.: $\alpha(\text{K})\text{exp}=0.0088$ 20 and $\alpha(\text{L})\text{exp}=0.0044$ 8 (1972Ad12). Other: $\alpha(\text{K})\text{exp}=0.013$ 4 (1967Hu02).
		611.8 [‡] 2	100.0 [‡] 22	864.93	3/2 ⁺	E2		0.01238	$\alpha(\text{K})=0.00980$ 14; $\alpha(\text{L})=0.00199$ 3; $\alpha(\text{M})=0.000463$ 7 $\alpha(\text{N})=0.0001100$ 16; $\alpha(\text{O})=1.651\times 10^{-5}$ 24; $\alpha(\text{P})=8.36\times 10^{-7}$ 12 Mult.: $\alpha(\text{K})\text{exp}=0.0082$ 8 and $\alpha(\text{L})\text{exp}\approx 0.0014$ (1972Ad12). Other: $\alpha(\text{K})\text{exp}=0.0079$ 24 (1967Hu02).
		836.2 [‡] 3	17.1 [‡] 11	639.96	5/2 ⁺	(E2)		0.00621	$\alpha(\text{K})=0.00506$ 7; $\alpha(\text{L})=0.000888$ 13; $\alpha(\text{M})=0.000204$ 3 $\alpha(\text{N})=4.85\times 10^{-5}$ 7; $\alpha(\text{O})=7.45\times 10^{-6}$ 11; $\alpha(\text{P})=4.35\times 10^{-7}$ 6 Mult.: $\alpha(\text{K})\text{exp}<0.0048$ (1972Ad12), consistent with both E1 and E2.
		978.8 [‡] 3	5.7 [‡] 3	497.42	3/2 ⁺				

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)									
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\delta^\#$	$\alpha^@$	Comments
1476.56	(3/2) ⁺	1406.1 [‡] 3	4.6 [‡] 5	70.48	5/2 ⁺				
1487.72	(1/2) ⁻	990.2 [‡] 3	100 [‡] 6	497.42	3/2 ⁺	[E1]		1.74×10 ⁻³	$\alpha(\text{K})=0.001474$ 21; $\alpha(\text{L})=0.000207$ 3; $\alpha(\text{M})=4.64\times 10^{-5}$ 7 $\alpha(\text{N})=1.106\times 10^{-5}$ 16; $\alpha(\text{O})=1.745\times 10^{-6}$ 25; $\alpha(\text{P})=1.203\times 10^{-7}$ 17
		1000.0 [‡] 3	66 [‡] 2	487.63	1/2 ⁺	[E1]		1.71×10 ⁻³	$\alpha(\text{K})=0.001448$ 21; $\alpha(\text{L})=0.000204$ 3; $\alpha(\text{M})=4.55\times 10^{-5}$ 7 $\alpha(\text{N})=1.085\times 10^{-5}$ 16; $\alpha(\text{O})=1.713\times 10^{-6}$ 24; $\alpha(\text{P})=1.181\times 10^{-7}$ 17
		1115.2 [‡] 4	16 [‡] 6	372.58	3/2 ⁻	[M1]		0.00685	$\alpha(\text{K})=0.00575$ 8; $\alpha(\text{L})=0.000852$ 12; $\alpha(\text{M})=0.000192$ 3 $\alpha(\text{N})=4.59\times 10^{-5}$ 7; $\alpha(\text{O})=7.31\times 10^{-6}$ 11; $\alpha(\text{P})=5.18\times 10^{-7}$ 8; $\alpha(\text{IPF})=5.39\times 10^{-7}$ 12
		1271.1 [‡] 5	6 [‡] 2	216.63	1/2 ⁻	E0+M1		0.13 6	$\alpha(\text{K})=0.00417$ 6; $\alpha(\text{L})=0.000616$ 9; $\alpha(\text{M})=0.0001386$ 20 $\alpha(\text{N})=3.32\times 10^{-5}$ 5; $\alpha(\text{O})=5.28\times 10^{-6}$ 8; $\alpha(\text{P})=3.75\times 10^{-7}$ 6; $\alpha(\text{IPF})=1.81\times 10^{-5}$ 3 α : $\alpha(\text{K})_{\text{exp}}$. Mult.: $\alpha(\text{K})_{\text{exp}}=0.13$ 6 and $\alpha(\text{L})_{\text{exp}}=0.033$ 20 (1972Ad12).
		1301.8 [‡] 4	30 [‡] 2	186.16	5/2 ⁻	[E2]		0.00258	$\alpha(\text{K})=0.00213$ 3; $\alpha(\text{L})=0.000330$ 5; $\alpha(\text{M})=7.48\times 10^{-5}$ 11 $\alpha(\text{N})=1.78\times 10^{-5}$ 3; $\alpha(\text{O})=2.79\times 10^{-6}$ 4; $\alpha(\text{P})=1.83\times 10^{-7}$ 3; $\alpha(\text{IPF})=1.81\times 10^{-5}$ 3
1512.55	(1/2) ⁻	259.25 [‡] 20	19.2 [‡] 14	1253.32	3/2 ⁻	M1+E2	0.85 23	0.228 25	$\alpha(\text{K})=0.180$ 24; $\alpha(\text{L})=0.0371$ 8; $\alpha(\text{M})=0.00866$ 13 $\alpha(\text{N})=0.00206$ 4; $\alpha(\text{O})=0.000310$ 9; $\alpha(\text{P})=1.61\times 10^{-5}$ 24 Mult., δ : $\alpha(\text{K})_{\text{exp}}=0.18$ 2 and $\alpha(\text{L}1)+\alpha(\text{L}2)<0.021$ (1972Ad12).
		418.35 [‡] 10	18 [‡] 3	1094.20	(1/2) ⁻	M1		0.0831	$\alpha(\text{K})=0.0694$ 10; $\alpha(\text{L})=0.01063$ 15; $\alpha(\text{M})=0.00240$ 4 $\alpha(\text{N})=0.000575$ 8; $\alpha(\text{O})=9.12\times 10^{-5}$ 13; $\alpha(\text{P})=6.38\times 10^{-6}$ 9 Mult.: $\alpha(\text{K})_{\text{exp}}=0.056$ 12 (1972Ad12).
		647.3 [‡] 2	53.2 [‡] 14	864.93	3/2 ⁺	E1		0.00397	$\alpha(\text{K})=0.00335$ 5; $\alpha(\text{L})=0.000483$ 7; $\alpha(\text{M})=0.0001083$ 16 $\alpha(\text{N})=2.58\times 10^{-5}$ 4; $\alpha(\text{O})=4.04\times 10^{-6}$ 6; $\alpha(\text{P})=2.69\times 10^{-7}$ 4 Mult.: $\alpha(\text{K})_{\text{exp}}=0.0044$ 13 (1972Ad12). Other: $\alpha(\text{K})_{\text{exp}}=0.0067$ 20 (1967Hu02).
		822.0 [‡] 6	2.4 [‡] 7	690.31	(3/2) ⁻	[M1]		0.01463	$\alpha(\text{K})=0.01227$ 18; $\alpha(\text{L})=0.00184$ 3; $\alpha(\text{M})=0.000414$ 6 $\alpha(\text{N})=9.91\times 10^{-5}$ 14; $\alpha(\text{O})=1.575\times 10^{-5}$ 23; $\alpha(\text{P})=1.112\times 10^{-6}$ 16
		939.2 [‡] 3	15.8 [‡] 10	573.14	(1/2) ⁺	[E1]		0.00192	$\alpha(\text{K})=0.001626$ 23; $\alpha(\text{L})=0.000229$ 4; $\alpha(\text{M})=5.13\times 10^{-5}$ 8

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult. †	$\alpha^@$	$I_{(\gamma+ce)}$	Comments
1512.55	(1/2) ⁻	1014.9 ‡ 3	100 ‡ 2	497.42	3/2 ⁺	E1	1.66×10 ⁻³		$\alpha(\text{N})=1.223\times 10^{-5}$ 18; $\alpha(\text{O})=1.93\times 10^{-6}$ 3; $\alpha(\text{P})=1.324\times 10^{-7}$ 19 $\alpha(\text{K})=0.001409$ 20; $\alpha(\text{L})=0.000198$ 3; $\alpha(\text{M})=4.43\times 10^{-5}$ 7 $\alpha(\text{N})=1.056\times 10^{-5}$ 15; $\alpha(\text{O})=1.667\times 10^{-6}$ 24; $\alpha(\text{P})=1.150\times 10^{-7}$ 17 Mult.: $\alpha(\text{K})_{\text{exp}}=0.0017$ 3 (1972Ad12). Other: $\alpha(\text{K})_{\text{exp}}=0.0021$ 6 (1967Hu02).
		1140.5 ‡ 3	16.5 ‡ 7	372.58	3/2 ⁻	(M1)	0.00648		$\alpha(\text{K})=0.00544$ 8; $\alpha(\text{L})=0.000806$ 12; $\alpha(\text{M})=0.000182$ 3 $\alpha(\text{N})=4.34\times 10^{-5}$ 6; $\alpha(\text{O})=6.91\times 10^{-6}$ 10; $\alpha(\text{P})=4.90\times 10^{-7}$ 7; $\alpha(\text{IPF})=1.333\times 10^{-6}$ 23 Mult.: $\alpha(\text{K})_{\text{exp}}\approx 0.006$ (1972Ad12).
		1296.1 ‡ 3	10.1 ‡ 3	216.63	1/2 ⁻	E0+M1	0.033	5	$\alpha(\text{K})=0.00398$ 6; $\alpha(\text{L})=0.000587$ 9; $\alpha(\text{M})=0.0001321$ 19 $\alpha(\text{N})=3.16\times 10^{-5}$ 5; $\alpha(\text{O})=5.03\times 10^{-6}$ 7; $\alpha(\text{P})=3.58\times 10^{-7}$ 5; $\alpha(\text{IPF})=2.33\times 10^{-5}$ 4 α : $\alpha(\text{K})_{\text{exp}}$. Mult.: $\alpha(\text{K})_{\text{exp}}=0.033$ 5 and $\alpha(\text{L})\approx 0.0067$ (1972Ad12).
		1326.8 ‡ 3	11.1 ‡ 7	186.16	5/2 ⁻	[E2]	0.00249		$\alpha(\text{K})=0.00206$ 3; $\alpha(\text{L})=0.000317$ 5; $\alpha(\text{M})=7.19\times 10^{-5}$ 10 $\alpha(\text{N})=1.714\times 10^{-5}$ 24; $\alpha(\text{O})=2.69\times 10^{-6}$ 4; $\alpha(\text{P})=1.765\times 10^{-7}$ 25; $\alpha(\text{IPF})=2.27\times 10^{-5}$ 4
1522.85	17/2 ⁺	283.8 3	8.7 22	1239.16	15/2 ⁻	[E1]	0.0253		$\alpha(\text{K})=0.0211$ 3; $\alpha(\text{L})=0.00323$ 5; $\alpha(\text{M})=0.000730$ 11 $\alpha(\text{N})=0.0001729$ 25; $\alpha(\text{O})=2.65\times 10^{-5}$ 4; $\alpha(\text{P})=1.607\times 10^{-6}$ 23 B(E1)(W.u.)=7.E-8 3
		479.5 3	19.1 22	1043.50	19/2 ⁻	E1	0.00748		$\alpha(\text{K})=0.00629$ 9; $\alpha(\text{L})=0.000926$ 13; $\alpha(\text{M})=0.000208$ 3 $\alpha(\text{N})=4.95\times 10^{-5}$ 7; $\alpha(\text{O})=7.71\times 10^{-6}$ 11; $\alpha(\text{P})=4.99\times 10^{-7}$ 7 B(E1)(W.u.)=3.2×10 ⁻⁸ 10
		621.4 3	9.8 16	901.45	17/2 ⁺	[M1]	0.0297		$\alpha(\text{K})=0.0249$ 4; $\alpha(\text{L})=0.00376$ 6; $\alpha(\text{M})=0.000850$ 12 $\alpha(\text{N})=0.000203$ 3; $\alpha(\text{O})=3.23\times 10^{-5}$ 5; $\alpha(\text{P})=2.27\times 10^{-6}$ 4 B(M1)(W.u.)=7.8×10 ⁻⁷ 24
		718.0 3	35.5 22	804.91	17/2 ⁻	E1	0.00322		$\alpha(\text{K})=0.00272$ 4; $\alpha(\text{L})=0.000390$ 6; $\alpha(\text{M})=8.73\times 10^{-5}$ 13 $\alpha(\text{N})=2.08\times 10^{-5}$ 3; $\alpha(\text{O})=3.27\times 10^{-6}$ 5; $\alpha(\text{P})=2.20\times 10^{-7}$ 3 B(E1)(W.u.)=1.8×10 ⁻⁸ 5
		847.5 3	17 4	675.44	15/2 ⁺	[M1]	0.01355		$\alpha(\text{K})=0.01136$ 16; $\alpha(\text{L})=0.001700$ 24; $\alpha(\text{M})=0.000383$ 6 $\alpha(\text{N})=9.17\times 10^{-5}$ 13; $\alpha(\text{O})=1.458\times 10^{-5}$ 21; $\alpha(\text{P})=1.030\times 10^{-6}$ 15 B(M1)(W.u.)=5.3×10 ⁻⁷ 19
		889.8 3	7.1 22	632.93	13/2 ⁺	[E2]	0.00545		$\alpha(\text{K})=0.00446$ 7; $\alpha(\text{L})=0.000765$ 11; $\alpha(\text{M})=0.0001754$ 25 $\alpha(\text{N})=4.18\times 10^{-5}$ 6; $\alpha(\text{O})=6.43\times 10^{-6}$ 9; $\alpha(\text{P})=3.83\times 10^{-7}$ 6 B(E2)(W.u.)=0.00011 5
		935.9 3	100 12	586.78	15/2 ⁻	E1	0.00193		$\alpha(\text{K})=0.001636$ 23; $\alpha(\text{L})=0.000231$ 4; $\alpha(\text{M})=5.17\times 10^{-5}$ 8 $\alpha(\text{N})=1.231\times 10^{-5}$ 18; $\alpha(\text{O})=1.94\times 10^{-6}$ 3; $\alpha(\text{P})=1.333\times 10^{-7}$ 19 B(E1)(W.u.)=2.3×10 ⁻⁸ 6
		1052.2 3	11 3	470.52	13/2 ⁺	[E2]	0.00388		$\alpha(\text{K})=0.00320$ 5; $\alpha(\text{L})=0.000522$ 8; $\alpha(\text{M})=0.0001189$ 17

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\alpha^@$	Comments
								$\alpha(\text{N})=2.83\times 10^{-5}$ 4; $\alpha(\text{O})=4.40\times 10^{-6}$ 7; $\alpha(\text{P})=2.75\times 10^{-7}$ 4 B(E2)(W.u.)=7.E-5 3
1543.45	3/2 ⁻	678.5 [‡] 3	88 [‡] 8	864.93	3/2 ⁺	[E1]	0.00361	$\alpha(\text{K})=0.00304$ 5; $\alpha(\text{L})=0.000438$ 7; $\alpha(\text{M})=9.81\times 10^{-5}$ 14 $\alpha(\text{N})=2.34\times 10^{-5}$ 4; $\alpha(\text{O})=3.66\times 10^{-6}$ 6; $\alpha(\text{P})=2.45\times 10^{-7}$ 4
		903.5 [‡] 3	60 [‡] 7	639.96	5/2 ⁺	[E1]	0.00207	$\alpha(\text{K})=0.001748$ 25; $\alpha(\text{L})=0.000247$ 4; $\alpha(\text{M})=5.53\times 10^{-5}$ 8 $\alpha(\text{N})=1.317\times 10^{-5}$ 19; $\alpha(\text{O})=2.08\times 10^{-6}$ 3; $\alpha(\text{P})=1.422\times 10^{-7}$ 20
		1045.9 [‡] 3	65 [‡] 5	497.42	3/2 ⁺	[E1]	1.58 $\times 10^{-3}$	$\alpha(\text{K})=0.001334$ 19; $\alpha(\text{L})=0.000187$ 3; $\alpha(\text{M})=4.19\times 10^{-5}$ 6 $\alpha(\text{N})=9.98\times 10^{-6}$ 14; $\alpha(\text{O})=1.576\times 10^{-6}$ 22; $\alpha(\text{P})=1.090\times 10^{-7}$ 16
		1055.8 [‡] 3	100 [‡] 8	487.63	1/2 ⁺	[E1]	1.55 $\times 10^{-3}$	$\alpha(\text{K})=0.001312$ 19; $\alpha(\text{L})=0.000184$ 3; $\alpha(\text{M})=4.11\times 10^{-5}$ 6 $\alpha(\text{N})=9.80\times 10^{-6}$ 14; $\alpha(\text{O})=1.549\times 10^{-6}$ 22; $\alpha(\text{P})=1.071\times 10^{-7}$ 15
		1170.9 [‡] 3	83 [‡] 8	372.58	3/2 ⁻	M1	0.00608	$\alpha(\text{K})=0.00510$ 8; $\alpha(\text{L})=0.000755$ 11; $\alpha(\text{M})=0.0001700$ 24 $\alpha(\text{N})=4.07\times 10^{-5}$ 6; $\alpha(\text{O})=6.47\times 10^{-6}$ 9; $\alpha(\text{P})=4.59\times 10^{-7}$ 7; $\alpha(\text{IPF})=3.26\times 10^{-6}$ 6 Mult.: $\alpha(\text{K})_{\text{exp}}\approx 0.0046$ 4 (1972Ad12).
		1357.5 [‡] 4	27.5 [‡] 23	186.16	5/2 ⁻	[M1]	0.00427	$\alpha(\text{K})=0.00355$ 5; $\alpha(\text{L})=0.000523$ 8; $\alpha(\text{M})=0.0001178$ 17 $\alpha(\text{N})=2.82\times 10^{-5}$ 4; $\alpha(\text{O})=4.48\times 10^{-6}$ 7; $\alpha(\text{P})=3.19\times 10^{-7}$ 5; $\alpha(\text{IPF})=3.97\times 10^{-5}$ 6
1553.4	21/2 ⁺	258.0 3	84 16	1295.5	19/2 ⁺	[M1+E2]	0.304	$\alpha(\text{K})=0.253$ 4; $\alpha(\text{L})=0.0393$ 6; $\alpha(\text{M})=0.00890$ 13 $\alpha(\text{N})=0.00213$ 3; $\alpha(\text{O})=0.000338$ 5; $\alpha(\text{P})=2.35\times 10^{-5}$ 4 δ : 0.11 2 (2000Da09) and 0.10 1 (1995Ar18), assuming K=7/2.
		498.8 3	100 22	1054.6	17/2 ⁺	E2	0.0203	$\alpha(\text{K})=0.01561$ 22; $\alpha(\text{L})=0.00359$ 5; $\alpha(\text{M})=0.000846$ 12 $\alpha(\text{N})=0.000200$ 3; $\alpha(\text{O})=2.96\times 10^{-5}$ 5; $\alpha(\text{P})=1.315\times 10^{-6}$ 19 Mult.: $A_2=0.41$ 13 (2000Da09).
1577.1	23/2 ⁻	274.9 3	100 13	1302.2	21/2 ⁻	M1+E2	0.256	$\alpha(\text{K})=0.213$ 3; $\alpha(\text{L})=0.0330$ 5; $\alpha(\text{M})=0.00748$ 11 $\alpha(\text{N})=0.00179$ 3; $\alpha(\text{O})=0.000284$ 4; $\alpha(\text{P})=1.97\times 10^{-5}$ 3 Mult.: $A_2=-0.3$ 4 (1970Sk04) and $A_2=-0.07$ 5 (2000Da09). δ : 0.16 1 (2000Da09) and 0.16 1 (1995Ar18), assuming K=7/2.
		533.6 3	83 17	1043.50	19/2 ⁻	E2	0.01716	$\alpha(\text{K})=0.01334$ 19; $\alpha(\text{L})=0.00294$ 5; $\alpha(\text{M})=0.000689$ 10 $\alpha(\text{N})=0.0001634$ 23; $\alpha(\text{O})=2.43\times 10^{-5}$ 4; $\alpha(\text{P})=1.130\times 10^{-6}$ 16 Mult.: $A_2=0.34$ 7 (2000Da09).
1602.60	19/2 ⁻	171.0 3	17 6	1431.6	17/2 ⁻	[M1]	0.949	$\alpha(\text{K})=0.790$ 12; $\alpha(\text{L})=0.1236$ 19; $\alpha(\text{M})=0.0280$ 5 $\alpha(\text{N})=0.00671$ 10; $\alpha(\text{O})=0.001062$ 16; $\alpha(\text{P})=7.36\times 10^{-5}$ 11 B(M1)(W.u.)>0.00032
		363.4 3	21 6	1239.16	15/2 ⁻	(E2)	0.0470	$\alpha(\text{K})=0.0339$ 5; $\alpha(\text{L})=0.01003$ 15; $\alpha(\text{M})=0.00241$ 4 $\alpha(\text{N})=0.000568$ 9; $\alpha(\text{O})=8.14\times 10^{-5}$ 12; $\alpha(\text{P})=2.76\times 10^{-6}$ 4 B(E2)(W.u.)>0.14 Mult.: $A_2=0.22$ 5 (2000Da09).
		797.8 3	100 8	804.91	17/2 ⁻	M1	0.01577	$\alpha(\text{K})=0.01322$ 19; $\alpha(\text{L})=0.00198$ 3; $\alpha(\text{M})=0.000447$ 7 $\alpha(\text{N})=0.0001070$ 15; $\alpha(\text{O})=1.700\times 10^{-5}$ 24; $\alpha(\text{P})=1.200\times 10^{-6}$ 17 B(M1)(W.u.)>1.9 $\times 10^{-5}$ Mult.: $A_2=-0.29$ 33 and $\alpha(\text{K})_{\text{exp}}=0.013$ 3 (2000Da09).

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)									Comments
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\delta^\#$	$\alpha^@$	
1602.60	19/2 ⁻	1016.0 3	7.7 19	586.78	15/2 ⁻	[E2]		0.00416	$\alpha(\text{K})=0.00343$ 5; $\alpha(\text{L})=0.000564$ 8; $\alpha(\text{M})=0.0001287$ 18 $\alpha(\text{N})=3.07\times 10^{-5}$ 5; $\alpha(\text{O})=4.75\times 10^{-6}$ 7; $\alpha(\text{P})=2.95\times 10^{-7}$ 5 B(E2)(W.u.)>0.00030
1605.3	19/2 ⁺	82.5 3	100	1522.85	17/2 ⁺				
1625.7	23/2 ⁻	271.0 3	100	1354.8	21/2 ⁻	M1+E2	+0.25 +5-3	0.257 6	$\alpha(\text{K})=0.213$ 5; $\alpha(\text{L})=0.0340$ 5; $\alpha(\text{M})=0.00774$ 12 $\alpha(\text{N})=0.00185$ 3; $\alpha(\text{O})=0.000291$ 5; $\alpha(\text{P})=1.96\times 10^{-5}$ 5 Mult.: $A_2=+0.08$ 4 and $\alpha(\text{K})_{\text{exp}}=0.25$ 6 (2000Da09). Others: $A_2=0.52$ 13 (1970Sk04); $A_2=0.15$ 10, $A_4=0.028$ 12 (1975Ba13). $A_2=0.196$ 13, $A_4=0.037$ 19 (1982Ao04). δ : From 1982Ao04.
1650.7	(19/2 ⁻)	175.0 3	100	1475.7	(17/2 ⁻)				
1685.7	23/2 ⁺	276.9 3	18 4	1408.8	21/2 ⁺	[M1+E2]		0.251	$\alpha(\text{K})=0.209$ 3; $\alpha(\text{L})=0.0324$ 5; $\alpha(\text{M})=0.00733$ 11 $\alpha(\text{N})=0.00175$ 3; $\alpha(\text{O})=0.000278$ 4; $\alpha(\text{P})=1.93\times 10^{-5}$ 3 δ : 0.19 2 (2000Da09) and 0.18 1 (1995Ar18), assuming K=7/2.
		539.0 3	100 4	1146.7	19/2 ⁺	(E2)		0.01674	$\alpha(\text{K})=0.01304$ 19; $\alpha(\text{L})=0.00285$ 4; $\alpha(\text{M})=0.000669$ 10 $\alpha(\text{N})=0.0001586$ 23; $\alpha(\text{O})=2.36\times 10^{-5}$ 4; $\alpha(\text{P})=1.105\times 10^{-6}$ 16 Mult.: $A_2=0.46$ 5 (2000Da09).
1698.3	23/2 ⁺	343.5 3	100	1354.8	21/2 ⁻	E1		0.01600	$\alpha(\text{K})=0.01340$ 19; $\alpha(\text{L})=0.00202$ 3; $\alpha(\text{M})=0.000455$ 7 $\alpha(\text{N})=0.0001080$ 16; $\alpha(\text{O})=1.667\times 10^{-5}$ 24; $\alpha(\text{P})=1.037\times 10^{-6}$ 15 B(E1)(W.u.)>5.2×10 ⁻⁶ Mult.: $A_2=-0.25$ 4 and $\alpha(\text{K})_{\text{exp}}=0.016$ 6 (2000Da09); $A_2=-0.22$ 10, $A_4=-0.03$ 10 (1975Ba13).
1737.3	21/2 ⁺	131.9 3	100	1605.3	19/2 ⁺	M1+E2		1.98	$\alpha(\text{K})=1.64$ 3; $\alpha(\text{L})=0.258$ 4; $\alpha(\text{M})=0.0586$ 9 $\alpha(\text{N})=0.01401$ 22; $\alpha(\text{O})=0.00222$ 4; $\alpha(\text{P})=0.0001536$ 24 Mult.: $A_2=0.09$ 7 (2000Da09).
1766.04	21/2 ⁻	163.5 3	100 26	1602.60	19/2 ⁻	(M1+E2)		1.077 16	$\alpha(\text{K})=0.896$ 14; $\alpha(\text{L})=0.1403$ 21; $\alpha(\text{M})=0.0318$ 5 $\alpha(\text{N})=0.00761$ 12; $\alpha(\text{O})=0.001205$ 18; $\alpha(\text{P})=8.35\times 10^{-5}$ 13 Mult.: $A_2=0.33$ 29 (2000Da09).
		334.6 3	28 7	1431.6	17/2 ⁻	[E2]		0.0595	$\alpha(\text{K})=0.0420$ 6; $\alpha(\text{L})=0.01341$ 20; $\alpha(\text{M})=0.00323$ 5 $\alpha(\text{N})=0.000762$ 11; $\alpha(\text{O})=0.0001084$ 16; $\alpha(\text{P})=3.38\times 10^{-6}$ 5
		722.4 3	83 11	1043.50	19/2 ⁻	M1		0.0203	$\alpha(\text{K})=0.01698$ 24; $\alpha(\text{L})=0.00255$ 4; $\alpha(\text{M})=0.000576$ 8 $\alpha(\text{N})=0.0001379$ 20; $\alpha(\text{O})=2.19\times 10^{-5}$ 3; $\alpha(\text{P})=1.543\times 10^{-6}$ 22 Mult.: $A_2=-0.29$ 25.
		960.8 3	30 7	804.91	17/2 ⁻	[E2]		0.00465	$\alpha(\text{K})=0.00383$ 6; $\alpha(\text{L})=0.000640$ 9; $\alpha(\text{M})=0.0001464$ 21 $\alpha(\text{N})=3.49\times 10^{-5}$ 5; $\alpha(\text{O})=5.39\times 10^{-6}$ 8; $\alpha(\text{P})=3.29\times 10^{-7}$ 5
1828.1	23/2 ⁺	274.8 3	60 20	1553.4	21/2 ⁺	M1+E2		0.256	$\alpha(\text{K})=0.213$ 3; $\alpha(\text{L})=0.0331$ 5; $\alpha(\text{M})=0.00749$ 11 $\alpha(\text{N})=0.00179$ 3; $\alpha(\text{O})=0.000284$ 4; $\alpha(\text{P})=1.98\times 10^{-5}$ 3 Mult.: $A_2=-0.07$ 5 (2000Da09).
		532.5 3	100 24	1295.5	19/2 ⁺	[E2]		0.01724	δ : 0.11 2 (2000Da09) and 0.10 1 (1995Ar18), assuming K=5/2. $\alpha(\text{K})=0.01341$ 19; $\alpha(\text{L})=0.00295$ 5; $\alpha(\text{M})=0.000694$ 10 $\alpha(\text{N})=0.0001644$ 24; $\alpha(\text{O})=2.44\times 10^{-5}$ 4; $\alpha(\text{P})=1.135\times 10^{-6}$ 16
1834.5	25/2 ⁺	136.1 3	100 6	1698.3	23/2 ⁺	M1+E2		1.81	$\alpha(\text{K})=1.504$ 23; $\alpha(\text{L})=0.236$ 4; $\alpha(\text{M})=0.0535$ 9

Adopted Levels, Gammas (continued)

 $\gamma(^{177}\text{Ta})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\delta^\#$	$\alpha^@$	Comments
									$\alpha(\text{N})=0.01281$ 20; $\alpha(\text{O})=0.00203$ 4; $\alpha(\text{P})=0.0001404$ 22 Mult.: $\alpha(\text{exp})=1.93$ 20 and $\alpha(\text{L})\text{exp}=0.35$ 12 (2000Da09); $A_2=0.14$ 7 (1975Ba13).
1834.5	25/2 ⁺	208.8 3	3.4 8	1625.7	23/2 ⁻	E1		0.0545	$\alpha(\text{K})=0.0453$ 7; $\alpha(\text{L})=0.00710$ 11; $\alpha(\text{M})=0.001606$ 24 $\alpha(\text{N})=0.000380$ 6; $\alpha(\text{O})=5.77\times 10^{-5}$ 9; $\alpha(\text{P})=3.33\times 10^{-6}$ 5 Mult.: $\alpha(\text{exp})=0.05$ 2 (2000Da09).
1864.9	(23/2 ⁻)	412 1	56 13	1452.4	25/2 ⁻	[M1+E2]		0.0865 14	$\alpha(\text{K})=0.0722$ 12; $\alpha(\text{L})=0.01107$ 17; $\alpha(\text{M})=0.00250$ 4 $\alpha(\text{N})=0.000599$ 10; $\alpha(\text{O})=9.50\times 10^{-5}$ 15; $\alpha(\text{P})=6.64\times 10^{-6}$ 11
		459 1	63 25	1406.0	(19/2 ⁻)	[E2]		0.0250	$\alpha(\text{K})=0.0190$ 3; $\alpha(\text{L})=0.00464$ 8; $\alpha(\text{M})=0.001099$ 18 $\alpha(\text{N})=0.000260$ 4; $\alpha(\text{O})=3.81\times 10^{-5}$ 6; $\alpha(\text{P})=1.591\times 10^{-6}$ 24
		853.2 3	100 25	1011.7	21/2 ⁻	[M1+E2]		0.01333	$\alpha(\text{K})=0.01117$ 16; $\alpha(\text{L})=0.001671$ 24; $\alpha(\text{M})=0.000377$ 6 $\alpha(\text{N})=9.02\times 10^{-5}$ 13; $\alpha(\text{O})=1.433\times 10^{-5}$ 21; $\alpha(\text{P})=1.012\times 10^{-6}$ 15
1869.0	25/2 ⁻	292.0 3	79 9	1577.1	23/2 ⁻	[M1+E2]		0.217	$\alpha(\text{K})=0.181$ 3; $\alpha(\text{L})=0.0280$ 4; $\alpha(\text{M})=0.00634$ 9 $\alpha(\text{N})=0.001517$ 22; $\alpha(\text{O})=0.000240$ 4; $\alpha(\text{P})=1.674\times 10^{-5}$ 24 δ : 0.17 1 (2000Da09) and 0.17 1 (1995Ar18), assuming $K=9/2$.
		566.8 3	100 11	1302.2	21/2 ⁻	[E2]		0.01483	$\alpha(\text{K})=0.01163$ 17; $\alpha(\text{L})=0.00246$ 4; $\alpha(\text{M})=0.000577$ 9 $\alpha(\text{N})=0.0001368$ 20; $\alpha(\text{O})=2.04\times 10^{-5}$ 3; $\alpha(\text{P})=9.88\times 10^{-7}$ 14
1874.6	25/2 ⁻	248.9 3	100 17	1625.7	23/2 ⁻	M1+E2		0.335	$\alpha(\text{K})=0.279$ 4; $\alpha(\text{L})=0.0434$ 7; $\alpha(\text{M})=0.00983$ 15 $\alpha(\text{N})=0.00235$ 4; $\alpha(\text{O})=0.000373$ 6; $\alpha(\text{P})=2.59\times 10^{-5}$ 4 Mult.: $A_2=0.23$ 10. $\alpha(\text{exp})=0.38$ 3 (2000Da09).
		519.6 3	9 4	1354.8	21/2 ⁻	[E2]		0.0183	$\alpha(\text{K})=0.01419$ 20; $\alpha(\text{L})=0.00318$ 5; $\alpha(\text{M})=0.000747$ 11 $\alpha(\text{N})=0.0001770$ 25; $\alpha(\text{O})=2.62\times 10^{-5}$ 4; $\alpha(\text{P})=1.199\times 10^{-6}$ 17
1904.5	23/2 ⁺	167.1 3	100 15	1737.3	21/2 ⁺	M1+E2		1.013	$\alpha(\text{K})=0.843$ 13; $\alpha(\text{L})=0.1319$ 20; $\alpha(\text{M})=0.0299$ 5 $\alpha(\text{N})=0.00716$ 11; $\alpha(\text{O})=0.001133$ 17; $\alpha(\text{P})=7.85\times 10^{-5}$ 12 Mult.: $A_2=0.10$ 11 (2000Da09).
		299.3 3	19.9 23	1605.3	19/2 ⁺	[E2]		0.0826	δ : 0.28 3 (2000Da09) and 0.34 2 (1995Ar18), using $J=23/2$, assuming $K=17/2$. $\alpha(\text{K})=0.0563$ 8; $\alpha(\text{L})=0.0201$ 3; $\alpha(\text{M})=0.00488$ 7
1920.1	25/2 ⁻	294.7 3	100 26	1625.7	23/2 ⁻	M1+E2	+0.30 +6-8	0.201 6	$\alpha(\text{N})=0.001149$ 17; $\alpha(\text{O})=0.0001618$ 24; $\alpha(\text{P})=4.44\times 10^{-6}$ 7 $\alpha(\text{K})=0.167$ 5; $\alpha(\text{L})=0.0268$ 5; $\alpha(\text{M})=0.00610$ 10 $\alpha(\text{N})=0.001458$ 23; $\alpha(\text{O})=0.000229$ 4; $\alpha(\text{P})=1.54\times 10^{-5}$ 5 Mult.: $A_2=0.22$ 17 (1975Ba13); $A_2=0.27$ 5, $A_4=-0.08$ 6 (1982Ao04).
		565 1	16 6	1354.8	21/2 ⁻	[E2]		0.01494	δ : From $\gamma(\theta)$ in 1982Ao04. Other: $\delta=0.35$ 9 (2000Da09), assuming $K=21/2$. $\alpha(\text{K})=0.01171$ 17; $\alpha(\text{L})=0.00249$ 4; $\alpha(\text{M})=0.000582$ 9 $\alpha(\text{N})=0.0001381$ 21; $\alpha(\text{O})=2.06\times 10^{-5}$ 3; $\alpha(\text{P})=9.95\times 10^{-7}$ 15
1949.4	23/2 ⁻	183.1 3	67 23	1766.04	21/2 ⁻	[M1+E2]		0.784 12	$\alpha(\text{K})=0.652$ 10; $\alpha(\text{L})=0.1020$ 15; $\alpha(\text{M})=0.0231$ 4 $\alpha(\text{N})=0.00553$ 9; $\alpha(\text{O})=0.000876$ 13; $\alpha(\text{P})=6.08\times 10^{-5}$ 9 δ : 6.2 43 (2000Da09), assuming $K=19/2$.
		346.9 3	100 25	1602.60	19/2 ⁻	[E2]		0.0536	$\alpha(\text{K})=0.0382$ 6; $\alpha(\text{L})=0.01180$ 17; $\alpha(\text{M})=0.00284$ 4 $\alpha(\text{N})=0.000670$ 10; $\alpha(\text{O})=9.56\times 10^{-5}$ 14; $\alpha(\text{P})=3.09\times 10^{-6}$ 5

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\alpha^@$	Comments
1949.4	23/2 ⁻	647.3 3	38 17	1302.2	21/2 ⁻	[M1]	0.0268	$\alpha(\text{K})=0.0224$ 4; $\alpha(\text{L})=0.00339$ 5; $\alpha(\text{M})=0.000765$ 11 $\alpha(\text{N})=0.000183$ 3; $\alpha(\text{O})=2.91\times 10^{-5}$ 4; $\alpha(\text{P})=2.04\times 10^{-6}$ 3
1973.1	29/2 ⁻	520.7 3	100	1452.4	25/2 ⁻	E2	0.0182	$\alpha(\text{K})=0.01412$ 20; $\alpha(\text{L})=0.00316$ 5; $\alpha(\text{M})=0.000742$ 11 $\alpha(\text{N})=0.0001758$ 25; $\alpha(\text{O})=2.60\times 10^{-5}$ 4; $\alpha(\text{P})=1.194\times 10^{-6}$ 17 Mult.: $A_2=0.28$ 4 (2000Da09).
1975.0	25/2 ⁺	289.4 3	18 8	1685.7	23/2 ⁺	[M1+E2]	0.222	$\alpha(\text{K})=0.185$ 3; $\alpha(\text{L})=0.0287$ 4; $\alpha(\text{M})=0.00650$ 10 $\alpha(\text{N})=0.001555$ 23; $\alpha(\text{O})=0.000246$ 4; $\alpha(\text{P})=1.716\times 10^{-5}$ 25 δ : 0.28 6 (2000Da09) and 0.28 1 (1995Ar18), assuming $K=7/2$.
		566.1 3	100 9	1408.8	21/2 ⁺	[E2]	0.01487	$\alpha(\text{K})=0.01166$ 17; $\alpha(\text{L})=0.00247$ 4; $\alpha(\text{M})=0.000579$ 9 $\alpha(\text{N})=0.0001373$ 20; $\alpha(\text{O})=2.05\times 10^{-5}$ 3; $\alpha(\text{P})=9.91\times 10^{-7}$ 14
2037.0	27/2 ⁺	202.5 3	100 4	1834.5	25/2 ⁺	M1+E2	0.592	$\alpha(\text{K})=0.493$ 8; $\alpha(\text{L})=0.0769$ 12; $\alpha(\text{M})=0.0174$ 3 $\alpha(\text{N})=0.00417$ 6; $\alpha(\text{O})=0.000661$ 10; $\alpha(\text{P})=4.59\times 10^{-5}$ 7 Mult.: $A_2=0.14$ 9 and $\alpha(\text{K})_{\text{exp}}=0.41$ 8 (2000Da09); $A_2=-0.07$ 19 (1975Ba13).
		338.7 3	5.6 17	1698.3	23/2 ⁺	[E2]	0.0574	δ : 0.33 6 (2000Da09), assuming $K=23/2$. $\alpha(\text{K})=0.0407$ 6; $\alpha(\text{L})=0.01284$ 19; $\alpha(\text{M})=0.00309$ 5 $\alpha(\text{N})=0.000729$ 11; $\alpha(\text{O})=0.0001039$ 15; $\alpha(\text{P})=3.28\times 10^{-6}$ 5
2098.1	25/2 ⁺	399.7 3	100	1698.3	23/2 ⁺	M1	0.0937	$\alpha(\text{K})=0.0782$ 11; $\alpha(\text{L})=0.01200$ 17; $\alpha(\text{M})=0.00271$ 4 $\alpha(\text{N})=0.000650$ 10; $\alpha(\text{O})=0.0001030$ 15; $\alpha(\text{P})=7.20\times 10^{-6}$ 11 B(M1)(W.u.)>0.00011
2101.5	25/2 ⁺	196.9 3	100 16	1904.5	23/2 ⁺	M1+E2	0.640 10	Mult.: $A_2=-0.59$ 21 and $\alpha(\text{K})_{\text{exp}}=0.11$ 3 (2000Da09). $\alpha(\text{K})=0.533$ 8; $\alpha(\text{L})=0.0832$ 13; $\alpha(\text{M})=0.0189$ 3 $\alpha(\text{N})=0.00451$ 7; $\alpha(\text{O})=0.000715$ 11; $\alpha(\text{P})=4.96\times 10^{-5}$ 8 Mult.: $A_2=-0.09$ 15 (2000Da09). The value overlaps with that for the 196.8 γ . $\alpha(\text{K})_{\text{exp}}=0.39$ 9 (2000Da09). Approximately 84% 195.3 γ and 16% 196.9 γ . δ : 0.30 6 (2000Da09) and 0.38 1 (1995Ar18), using $J=25/2$, assuming $K=17/2$.
		364.3 3	42 16	1737.3	21/2 ⁺	[E2]	0.0467	$\alpha(\text{K})=0.0337$ 5; $\alpha(\text{L})=0.00995$ 15; $\alpha(\text{M})=0.00239$ 4 $\alpha(\text{N})=0.000563$ 8; $\alpha(\text{O})=8.07\times 10^{-5}$ 12; $\alpha(\text{P})=2.75\times 10^{-6}$ 4
2116.0	25/2 ⁺	287.9 3	58 11	1828.1	23/2 ⁺	[M1+E2]	0.226	$\alpha(\text{K})=0.188$ 3; $\alpha(\text{L})=0.0291$ 5; $\alpha(\text{M})=0.00659$ 10 $\alpha(\text{N})=0.001577$ 23; $\alpha(\text{O})=0.000250$ 4; $\alpha(\text{P})=1.740\times 10^{-5}$ 25 δ : 0.10 2 (2000Da09) and 0.10 1 (1995Ar18), assuming $K=5/2$.
		562.6 3	100 22	1553.4	21/2 ⁺	[E2]	0.01509	$\alpha(\text{K})=0.01183$ 17; $\alpha(\text{L})=0.00252$ 4; $\alpha(\text{M})=0.000589$ 9 $\alpha(\text{N})=0.0001398$ 20; $\alpha(\text{O})=2.08\times 10^{-5}$ 3; $\alpha(\text{P})=1.005\times 10^{-6}$ 15
2116.6	27/2 ⁻	196.8 3	16 9	1920.1	25/2 ⁻	M1+E2	0.641 10	$\alpha(\text{K})=0.534$ 8; $\alpha(\text{L})=0.0833$ 13; $\alpha(\text{M})=0.0189$ 3 $\alpha(\text{N})=0.00452$ 7; $\alpha(\text{O})=0.000716$ 11; $\alpha(\text{P})=4.97\times 10^{-5}$ 8 Mult.: $A_2=-0.09$ 15 (2000Da09).
		242.1 3	100 18	1874.6	25/2 ⁻	M1+E2	0.362 6	$\alpha(\text{K})=0.301$ 5; $\alpha(\text{L})=0.0468$ 7; $\alpha(\text{M})=0.01061$ 16 $\alpha(\text{N})=0.00254$ 4; $\alpha(\text{O})=0.000402$ 6; $\alpha(\text{P})=2.80\times 10^{-5}$ 4 Mult.: $A_2=0.30$ 21 (2000Da09).
		490.9 3	30 9	1625.7	23/2 ⁻	[E2]	0.0211	$\alpha(\text{K})=0.01620$ 23; $\alpha(\text{L})=0.00377$ 6; $\alpha(\text{M})=0.000889$ 13 $\alpha(\text{N})=0.000211$ 3; $\alpha(\text{O})=3.10\times 10^{-5}$ 5; $\alpha(\text{P})=1.364\times 10^{-6}$ 20
2154.1	25/2 ⁻	204.7 3	56 12	1949.4	23/2 ⁻	M1+E2	0.575 9	$\alpha(\text{K})=0.478$ 7; $\alpha(\text{L})=0.0746$ 11; $\alpha(\text{M})=0.01692$ 25

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)								Comments
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\alpha^@$	
								$\alpha(\text{N})=0.00405$ 6; $\alpha(\text{O})=0.000641$ 10; $\alpha(\text{P})=4.45\times 10^{-5}$ 7 Mult.: $A_2=0.13$ 18 (2000Da09). δ : 1.1 5 (2000Da09), assuming $K=19/2$. $\alpha(\text{K})=0.0287$ 4; $\alpha(\text{L})=0.00802$ 12; $\alpha(\text{M})=0.00192$ 3 $\alpha(\text{N})=0.000453$ 7; $\alpha(\text{O})=6.53\times 10^{-5}$ 10; $\alpha(\text{P})=2.36\times 10^{-6}$ 4 $\alpha(\text{K})=0.1644$ 24; $\alpha(\text{L})=0.0254$ 4; $\alpha(\text{M})=0.00575$ 9 $\alpha(\text{N})=0.001377$ 20; $\alpha(\text{O})=0.000218$ 4; $\alpha(\text{P})=1.520\times 10^{-5}$ 22 Mult.: $A_2=-0.02$ 10 (2000Da09). δ : 0.14 1 (2000Da09) and 0.15 1 (1995Ar18), assuming $K=5/2$. $\alpha(\text{K})=0.01046$ 15; $\alpha(\text{L})=0.00215$ 3; $\alpha(\text{M})=0.000503$ 7 $\alpha(\text{N})=0.0001194$ 17; $\alpha(\text{O})=1.79\times 10^{-5}$ 3; $\alpha(\text{P})=8.91\times 10^{-7}$ 13 $\alpha(\text{K})=0.218$ 4; $\alpha(\text{L})=0.0338$ 5; $\alpha(\text{M})=0.00765$ 11 $\alpha(\text{N})=0.00183$ 3; $\alpha(\text{O})=0.000290$ 5; $\alpha(\text{P})=2.02\times 10^{-5}$ 3 Mult.: $A_2=0.33$ 13 (2000Da09). δ : 0.31 8 (2000Da09), assuming $K=21/2$. $\alpha(\text{K})=0.1439$ 21; $\alpha(\text{L})=0.0222$ 4; $\alpha(\text{M})=0.00503$ 8 $\alpha(\text{N})=0.001204$ 18; $\alpha(\text{O})=0.000191$ 3; $\alpha(\text{P})=1.330\times 10^{-5}$ 19 $\alpha(\text{K})=0.01163$ 17; $\alpha(\text{L})=0.00246$ 4; $\alpha(\text{M})=0.000577$ 9 $\alpha(\text{N})=0.0001368$ 20; $\alpha(\text{O})=2.04\times 10^{-5}$ 3; $\alpha(\text{P})=9.88\times 10^{-7}$ 14 $\alpha(\text{K})=0.330$ 5; $\alpha(\text{L})=0.0514$ 8; $\alpha(\text{M})=0.01165$ 17 $\alpha(\text{N})=0.00279$ 4; $\alpha(\text{O})=0.000441$ 7; $\alpha(\text{P})=3.07\times 10^{-5}$ 5 Mult.: $A_2=0.14$ 7 and $\alpha(\text{K})_{\text{exp}}=0.18$ 3 (2000Da09). Approximately 69% 232.5 γ and 31% 234.1 γ . Other: $A_2=0.10$ 10 (1975Ba13). δ : 0.33 5 (2000Da09), assuming $K=23/2$. $\alpha(\text{K})=0.0215$ 3; $\alpha(\text{L})=0.00544$ 8; $\alpha(\text{M})=0.001292$ 19 $\alpha(\text{N})=0.000305$ 5; $\alpha(\text{O})=4.45\times 10^{-5}$ 7; $\alpha(\text{P})=1.79\times 10^{-6}$ 3 $\alpha(\text{K})=0.1693$ 25; $\alpha(\text{L})=0.0262$ 4; $\alpha(\text{M})=0.00593$ 9 $\alpha(\text{N})=0.001418$ 21; $\alpha(\text{O})=0.000225$ 4; $\alpha(\text{P})=1.566\times 10^{-5}$ 23 δ : 0.25 4 (2000Da09) and 0.20 1 (1995Ar18), assuming $K=7/2$. $\alpha(\text{K})=0.01070$ 15; $\alpha(\text{L})=0.00222$ 4; $\alpha(\text{M})=0.000518$ 8 $\alpha(\text{N})=0.0001229$ 18; $\alpha(\text{O})=1.84\times 10^{-5}$ 3; $\alpha(\text{P})=9.11\times 10^{-7}$ 13 $\alpha(\text{K})=0.379$ 6; $\alpha(\text{L})=0.0590$ 9; $\alpha(\text{M})=0.01338$ 20 $\alpha(\text{N})=0.00320$ 5; $\alpha(\text{O})=0.000507$ 8; $\alpha(\text{P})=3.52\times 10^{-5}$ 6 $\alpha(\text{K})=0.0237$ 4; $\alpha(\text{L})=0.00619$ 9; $\alpha(\text{M})=0.001473$ 21 $\alpha(\text{N})=0.000348$ 5; $\alpha(\text{O})=5.06\times 10^{-5}$ 8; $\alpha(\text{P})=1.96\times 10^{-6}$ 3 $\alpha(\text{K})=0.363$ 6; $\alpha(\text{L})=0.0565$ 9; $\alpha(\text{M})=0.01281$ 19 $\alpha(\text{N})=0.00306$ 5; $\alpha(\text{O})=0.000486$ 7; $\alpha(\text{P})=3.37\times 10^{-5}$ 5 Mult.: $A_2=0.42$ 24 (2000Da09). δ : 0.27 4 (2000Da09) and 0.29 1 (1995Ar18), using $J=27/2$, assuming $K=17/2$. $\alpha(\text{K})=0.238$ 4; $\alpha(\text{L})=0.0369$ 6; $\alpha(\text{M})=0.00837$ 12 $\alpha(\text{N})=0.00200$ 3; $\alpha(\text{O})=0.000317$ 5; $\alpha(\text{P})=2.21\times 10^{-5}$ 4 Mult.: $A_2=0.34$ 39 (2000Da09). δ : 0.73 13 (2000Da09), assuming $K=21/2$.
2154.1	25/2 ⁻	388.0 3	100 16	1766.04	21/2 ⁻	[E2]	0.0392	
2171.4	27/2 ⁻	302.6 3	91 11	1869.0	25/2 ⁻	M1+E2	0.197	
		594.3 3	100 14	1577.1	23/2 ⁻	[E2]	0.01325	
2192.6	27/2 ⁻	272.6 3	100 21	1920.1	25/2 ⁻	M1+E2	0.262	
		317.9 3	29 6	1874.6	25/2 ⁻	[M1]	0.1726	
		566.8 3	40 18	1625.7	23/2 ⁻	[E2]	0.01483	
2271.1	29/2 ⁺	234.1 3	100 6	2037.0	27/2 ⁺	M1+E2	0.397	
		436.6 3	23.2 25	1834.5	25/2 ⁺	[E2]	0.0285	
2274.1	27/2 ⁺	299.3 3	18 7	1975.0	25/2 ⁺	[M1+E2]	0.203	
		588.3 3	100 7	1685.7	23/2 ⁺	[E2]	0.01357	
2324.1	27/2 ⁺	222.7 3	100 15	2101.5	25/2 ⁺	[M1+E2]	0.455	
		419.5 3	51 10	1904.5	23/2 ⁺	[E2]	0.0317	
2324.3	27/2 ⁺	226.2 3	100	2098.1	25/2 ⁺	M1+E2	0.436	
2380.4	29/2 ⁻	263.9 3	62 10	2116.6	27/2 ⁻	M1+E2	0.286	

Adopted Levels, Gammas (continued)

 $\gamma(^{177}\text{Ta})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\alpha^@$	Comments
2380.4	29/2 ⁻	505.8 3	100 17	1874.6	25/2 ⁻	[E2]	0.0196	$\alpha(\text{K})=0.01511$ 22; $\alpha(\text{L})=0.00344$ 5; $\alpha(\text{M})=0.000811$ 12 $\alpha(\text{N})=0.000192$ 3; $\alpha(\text{O})=2.84\times 10^{-5}$ 4; $\alpha(\text{P})=1.275\times 10^{-6}$ 18
2381.0	27/2 ⁻	226.9 3	30 10	2154.1	25/2 ⁻	M1+E2	0.432 7	$\alpha(\text{K})=0.360$ 6; $\alpha(\text{L})=0.0560$ 9; $\alpha(\text{M})=0.01270$ 19 $\alpha(\text{N})=0.00304$ 5; $\alpha(\text{O})=0.000481$ 7; $\alpha(\text{P})=3.34\times 10^{-5}$ 5 Mult.: $A_2=0.42$ 24 (2000Da09). δ : 1.4 8 (2000Da09), assuming $K=19/2$.
		431.7 3	100 18	1949.4	23/2 ⁻	[E2]	0.0294	$\alpha(\text{K})=0.0221$ 4; $\alpha(\text{L})=0.00564$ 8; $\alpha(\text{M})=0.001340$ 19 $\alpha(\text{N})=0.000317$ 5; $\alpha(\text{O})=4.62\times 10^{-5}$ 7; $\alpha(\text{P})=1.83\times 10^{-6}$ 3
2399.0	(27/2 ⁻)	426 1 534 1	30 10 100 30	1973.1 1864.9	29/2 ⁻ (23/2 ⁻)	E2	0.0171	$\alpha(\text{K})=0.01332$ 20; $\alpha(\text{L})=0.00293$ 5; $\alpha(\text{M})=0.000688$ 11 $\alpha(\text{N})=0.0001630$ 25; $\alpha(\text{O})=2.42\times 10^{-5}$ 4; $\alpha(\text{P})=1.128\times 10^{-6}$ 17 Mult.: $A_2=0.34$ 7.
2417.4	27/2 ⁺	947 1 301.2 3	80 30 72 12	1452.4 2116.0	25/2 ⁻ 25/2 ⁺	[M1+E2]	0.200	$\alpha(\text{K})=0.1664$ 24; $\alpha(\text{L})=0.0257$ 4; $\alpha(\text{M})=0.00583$ 9 $\alpha(\text{N})=0.001394$ 20; $\alpha(\text{O})=0.000221$ 4; $\alpha(\text{P})=1.539\times 10^{-5}$ 22 δ : 0.09 1 (2000Da09) and 0.10 1 (1995Ar18), assuming $K=5/2$.
		589.2 3	100 20	1828.1	23/2 ⁺	[E2]	0.01352	$\alpha(\text{K})=0.01066$ 15; $\alpha(\text{L})=0.00221$ 4; $\alpha(\text{M})=0.000516$ 8 $\alpha(\text{N})=0.0001224$ 18; $\alpha(\text{O})=1.83\times 10^{-5}$ 3; $\alpha(\text{P})=9.08\times 10^{-7}$ 13
2470.9	29/2 ⁻	278.4 3	100 21	2192.6	27/2 ⁻	[M1+E2]	0.247	$\alpha(\text{K})=0.206$ 3; $\alpha(\text{L})=0.0319$ 5; $\alpha(\text{M})=0.00722$ 11 $\alpha(\text{N})=0.001729$ 25; $\alpha(\text{O})=0.000274$ 4; $\alpha(\text{P})=1.91\times 10^{-5}$ 3 δ : 0.35 6 (2000Da09), assuming $K=21/2$.
		354.6 3 550.7 3	13 6 60 13	2116.6 1920.1	27/2 ⁻ 25/2 ⁻	[E2]	0.01589	$\alpha(\text{K})=0.01241$ 18; $\alpha(\text{L})=0.00268$ 4; $\alpha(\text{M})=0.000628$ 9 $\alpha(\text{N})=0.0001488$ 21; $\alpha(\text{O})=2.21\times 10^{-5}$ 4; $\alpha(\text{P})=1.054\times 10^{-6}$ 15
		596.2 3	19 10	1874.6	25/2 ⁻	[E2]	0.01315	$\alpha(\text{K})=0.01038$ 15; $\alpha(\text{L})=0.00214$ 3; $\alpha(\text{M})=0.000499$ 7 $\alpha(\text{N})=0.0001183$ 17; $\alpha(\text{O})=1.773\times 10^{-5}$ 25; $\alpha(\text{P})=8.85\times 10^{-7}$ 13
2487.3	29/2 ⁻	315.9 3	100 14	2171.4	27/2 ⁻	M1+E2	0.1756	$\alpha(\text{K})=0.1464$ 21; $\alpha(\text{L})=0.0226$ 4; $\alpha(\text{M})=0.00512$ 8 $\alpha(\text{N})=0.001225$ 18; $\alpha(\text{O})=0.000194$ 3; $\alpha(\text{P})=1.353\times 10^{-5}$ 20 Mult.: $A_2=-0.40$ 20 (2000Da09). δ : 0.13 2 (2000Da09) and 0.15 1 (1995Ar18), assuming $K=9/2$.
		618.2 3	98 14	1869.0	25/2 ⁻	[E2]	0.01209	$\alpha(\text{K})=0.00958$ 14; $\alpha(\text{L})=0.00193$ 3; $\alpha(\text{M})=0.000450$ 7 $\alpha(\text{N})=0.0001068$ 15; $\alpha(\text{O})=1.605\times 10^{-5}$ 23; $\alpha(\text{P})=8.18\times 10^{-7}$ 12
2529.9	31/2 ⁺	258.8 3	100 16	2271.1	29/2 ⁺	M1+E2	0.301	$\alpha(\text{K})=0.251$ 4; $\alpha(\text{L})=0.0390$ 6; $\alpha(\text{M})=0.00883$ 13 $\alpha(\text{N})=0.00211$ 3; $\alpha(\text{O})=0.000335$ 5; $\alpha(\text{P})=2.33\times 10^{-5}$ 4 Mult.: $A_2=-0.02$ 7 (2000Da09). δ : 0.38 4 (2000Da09), assuming $K=23/2$.
		492.9 3	50 6	2037.0	27/2 ⁺	E2	0.0209	$\alpha(\text{K})=0.01605$ 23; $\alpha(\text{L})=0.00372$ 6; $\alpha(\text{M})=0.000878$ 13 $\alpha(\text{N})=0.000208$ 3; $\alpha(\text{O})=3.06\times 10^{-5}$ 5; $\alpha(\text{P})=1.351\times 10^{-6}$ 19 Mult.: $A_2=0.31$ 9 (2000Da09).
2565.8	33/2 ⁻	592.6 3	100	1973.1	29/2 ⁻	[E2]	0.01334	$\alpha(\text{K})=0.01052$ 15; $\alpha(\text{L})=0.00217$ 3; $\alpha(\text{M})=0.000507$ 8 $\alpha(\text{N})=0.0001204$ 17; $\alpha(\text{O})=1.80\times 10^{-5}$ 3; $\alpha(\text{P})=8.97\times 10^{-7}$ 13
2569.9	29/2 ⁺	245.8 3	100 14	2324.1	27/2 ⁺	M1+E2	0.347	$\alpha(\text{K})=0.289$ 5; $\alpha(\text{L})=0.0449$ 7; $\alpha(\text{M})=0.01018$ 15

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\alpha^@$	Comments
								$\alpha(\text{N})=0.00243$ 4; $\alpha(\text{O})=0.000386$ 6; $\alpha(\text{P})=2.68\times 10^{-5}$ 4 Mult.: $A_2=0.10$ 11 (2000Da09). The value overlaps with that for the 245.4 γ and 245.6 γ . δ : 0.26 4 (2000Da09) and 0.34 1 (1995Ar18), using $J=29/2$, assuming $K=17/2$.
2569.9	29/2 ⁺	296.5 1 468.5 3 595 3	69 14 6.1 20	2274.1 27/2 ⁺ 2101.5 25/2 ⁺ 1975.0 25/2 ⁺		[E2]	0.0238	$\alpha(\text{K})=0.0181$ 3; $\alpha(\text{L})=0.00435$ 7; $\alpha(\text{M})=0.001029$ 15 $\alpha(\text{N})=0.000244$ 4; $\alpha(\text{O})=3.58\times 10^{-5}$ 5; $\alpha(\text{P})=1.518\times 10^{-6}$ 22 $\alpha(\text{K})=0.290$ 5; $\alpha(\text{L})=0.0450$ 7; $\alpha(\text{M})=0.01020$ 15 $\alpha(\text{N})=0.00244$ 4; $\alpha(\text{O})=0.000387$ 6; $\alpha(\text{P})=2.69\times 10^{-5}$ 4 Mult.: $A_2=0.10$ 11 (2000Da09). The value overlaps with that for the 245.4 γ and 245.6 γ . δ : 1.0 4 (2000Da09), assuming $K=25/2$.
2582.2	29/2 ⁺	472 1 308.5 3	100 43 18 6	2098.1 25/2 ⁺ 2274.1 27/2 ⁺		[E2] [M1+E2]	0.0233 0.187	$\alpha(\text{K})=0.0178$ 3; $\alpha(\text{L})=0.00425$ 7; $\alpha(\text{M})=0.001005$ 16 $\alpha(\text{N})=0.000238$ 4; $\alpha(\text{O})=3.49\times 10^{-5}$ 6; $\alpha(\text{P})=1.492\times 10^{-6}$ 23 $\alpha(\text{K})=0.1560$ 23; $\alpha(\text{L})=0.0241$ 4; $\alpha(\text{M})=0.00546$ 8 $\alpha(\text{N})=0.001306$ 19; $\alpha(\text{O})=0.000207$ 3; $\alpha(\text{P})=1.442\times 10^{-5}$ 21 δ : 0.23 4 (2000Da09) and 0.22 1 (1995Ar18), assuming $K=7/2$.
		607.0 3	100 13	1975.0 25/2 ⁺		[E2]	0.01261	$\alpha(\text{K})=0.00998$ 14; $\alpha(\text{L})=0.00203$ 3; $\alpha(\text{M})=0.000474$ 7 $\alpha(\text{N})=0.0001125$ 16; $\alpha(\text{O})=1.687\times 10^{-5}$ 24; $\alpha(\text{P})=8.51\times 10^{-7}$ 12
2628.5	(29/2 ⁻)	247.5 3 474.4 3		2381.0 27/2 ⁻ 2154.1 25/2 ⁻		[M1+E2] [E2]	0.341 0.0230	$\alpha(\text{K})=0.284$ 4; $\alpha(\text{L})=0.0441$ 7; $\alpha(\text{M})=0.00999$ 15 $\alpha(\text{N})=0.00239$ 4; $\alpha(\text{O})=0.000379$ 6; $\alpha(\text{P})=2.63\times 10^{-5}$ 4 $\alpha(\text{K})=0.01757$ 25; $\alpha(\text{L})=0.00419$ 6; $\alpha(\text{M})=0.000989$ 14
2666.0	31/2 ⁻	285.6 3 549.3 3	45 12 100 21	2380.4 29/2 ⁻ 2116.6 27/2 ⁻		[M1+E2] (E2)	0.230 0.01599	$\alpha(\text{N})=0.000234$ 4; $\alpha(\text{O})=3.44\times 10^{-5}$ 5; $\alpha(\text{P})=1.475\times 10^{-6}$ 21 $\alpha(\text{K})=0.192$ 3; $\alpha(\text{L})=0.0297$ 5; $\alpha(\text{M})=0.00674$ 10 $\alpha(\text{N})=0.001612$ 23; $\alpha(\text{O})=0.000256$ 4; $\alpha(\text{P})=1.78\times 10^{-5}$ 3 δ : 0.71 19 (2000Da09), assuming $K=21/2$.
								$\alpha(\text{K})=0.01249$ 18; $\alpha(\text{L})=0.00270$ 4; $\alpha(\text{M})=0.000632$ 9 $\alpha(\text{N})=0.0001499$ 22; $\alpha(\text{O})=2.23\times 10^{-5}$ 4; $\alpha(\text{P})=1.059\times 10^{-6}$ 15 Mult.: $A_2=0.10$ 8 (2000Da09). The value overlaps with that for the 549.9 γ .
2671.1	29/2 ⁺	399.8 3 572.9 3 634.3 3	100 65 88 35 82 29	2271.1 29/2 ⁺ 2098.1 25/2 ⁺ 2037.0 27/2 ⁺		(M1) [E2] [M1]	0.0937 0.01445 0.0282	$\alpha(\text{K})=0.0782$ 11; $\alpha(\text{L})=0.01199$ 17; $\alpha(\text{M})=0.00271$ 4 $\alpha(\text{N})=0.000649$ 10; $\alpha(\text{O})=0.0001030$ 15; $\alpha(\text{P})=7.19\times 10^{-6}$ 11 $B(\text{M1})(\text{W.u.})>4.3\times 10^{-5}$ Mult.: $A_2=-0.59$ 21 (2000Da09). The value overlaps with that for the 399.7 γ . $\alpha(\text{K})=0.01135$ 16; $\alpha(\text{L})=0.00239$ 4; $\alpha(\text{M})=0.000559$ 8 $\alpha(\text{N})=0.0001326$ 19; $\alpha(\text{O})=1.98\times 10^{-5}$ 3; $\alpha(\text{P})=9.65\times 10^{-7}$ 14 $B(\text{E2})(\text{W.u.})>0.017$
								$\alpha(\text{K})=0.0236$ 4; $\alpha(\text{L})=0.00357$ 5; $\alpha(\text{M})=0.000806$ 12 $\alpha(\text{N})=0.000193$ 3; $\alpha(\text{O})=3.06\times 10^{-5}$ 5; $\alpha(\text{P})=2.15\times 10^{-6}$ 3 $B(\text{M1})(\text{W.u.})>8.9\times 10^{-6}$
2727.3	29/2 ⁺	309.8 3	47 10	2417.4 27/2 ⁺		[M1+E2]	0.185	$\alpha(\text{K})=0.1543$ 22; $\alpha(\text{L})=0.0238$ 4; $\alpha(\text{M})=0.00540$ 8

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)								Comments
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\alpha^@$	
2727.3	29/2 ⁺	611.7 3	100 30	2116.0	25/2 ⁺	[E2]	0.01239	$\alpha(\text{N})=0.001291$ 19; $\alpha(\text{O})=0.000205$ 3; $\alpha(\text{P})=1.426\times 10^{-5}$ 21 δ : 0.10 2 (2000Da09) and 0.09 1 (1995Ar18), assuming $K=5/2$. $\alpha(\text{K})=0.00981$ 14; $\alpha(\text{L})=0.00199$ 3; $\alpha(\text{M})=0.000464$ 7
2754.9	31/2 ⁻	284.2 3	64 23	2470.9	29/2 ⁻	[M1+E2]	0.234	$\alpha(\text{N})=0.0001100$ 16; $\alpha(\text{O})=1.652\times 10^{-5}$ 24; $\alpha(\text{P})=8.37\times 10^{-7}$ 12 $\alpha(\text{K})=0.195$ 3; $\alpha(\text{L})=0.0302$ 5; $\alpha(\text{M})=0.00683$ 10 $\alpha(\text{N})=0.001634$ 24; $\alpha(\text{O})=0.000259$ 4; $\alpha(\text{P})=1.80\times 10^{-5}$ 3 δ : 0.51 14 (2000Da09), assuming $K=21/2$. $\alpha(\text{K})=0.01185$ 17; $\alpha(\text{L})=0.00252$ 4; $\alpha(\text{M})=0.000591$ 9 $\alpha(\text{N})=0.0001401$ 20; $\alpha(\text{O})=2.09\times 10^{-5}$ 3; $\alpha(\text{P})=1.006\times 10^{-6}$ 15 $\alpha(\text{K})=0.1414$ 21; $\alpha(\text{L})=0.0218$ 4; $\alpha(\text{M})=0.00494$ 7 $\alpha(\text{N})=0.001182$ 17; $\alpha(\text{O})=0.000187$ 3; $\alpha(\text{P})=1.306\times 10^{-5}$ 19 δ : 0.14 3 (2000Da09) and 0.16 1 (1995Ar18), assuming $K=9/2$. $\alpha(\text{K})=0.00901$ 13; $\alpha(\text{L})=0.00179$ 3; $\alpha(\text{M})=0.000416$ 6 $\alpha(\text{N})=9.88\times 10^{-5}$ 14; $\alpha(\text{O})=1.488\times 10^{-5}$ 21; $\alpha(\text{P})=7.70\times 10^{-7}$ 11 $\alpha(\text{K})=0.202$ 3; $\alpha(\text{L})=0.0313$ 5; $\alpha(\text{M})=0.00709$ 11 $\alpha(\text{N})=0.001697$ 25; $\alpha(\text{O})=0.000269$ 4; $\alpha(\text{P})=1.87\times 10^{-5}$ 3 Mult.: $A_2=0.04$ 5 (2000Da09). δ : 0.41 7 (2000Da09), assuming $K=23/2$. $\alpha(\text{K})=0.01303$ 19; $\alpha(\text{L})=0.00285$ 4; $\alpha(\text{M})=0.000669$ 10 $\alpha(\text{N})=0.0001585$ 23; $\alpha(\text{O})=2.35\times 10^{-5}$ 4; $\alpha(\text{P})=1.105\times 10^{-6}$ 16 Mult.: $A_2=0.46$ 5 (2000Da09). $\alpha(\text{K})=1.037$ 16; $\alpha(\text{L})=0.1625$ 25; $\alpha(\text{M})=0.0369$ 6 $\alpha(\text{N})=0.00882$ 14; $\alpha(\text{O})=0.001396$ 21; $\alpha(\text{P})=9.68\times 10^{-5}$ 15 $B(\text{M1})(\text{W.u.})=5.0\times 10^{-6}$ 19 Mult.: $\alpha(\text{exp})=2.0$ 6 (2000Da09). $\alpha(\text{K})=0.295$ 6; $\alpha(\text{L})=0.0458$ 9; $\alpha(\text{M})=0.01039$ 19 $\alpha(\text{N})=0.00248$ 5; $\alpha(\text{O})=0.000394$ 8; $\alpha(\text{P})=2.74\times 10^{-5}$ 5 $\alpha(\text{K})=0.256$ 5; $\alpha(\text{L})=0.0397$ 7; $\alpha(\text{M})=0.00900$ 16 $\alpha(\text{N})=0.00215$ 4; $\alpha(\text{O})=0.000341$ 6; $\alpha(\text{P})=2.37\times 10^{-5}$ 5 $B(\text{M1})(\text{W.u.})=9.E-7$ 3 $\alpha(\text{K})=0.1736$ 25; $\alpha(\text{L})=0.0269$ 4; $\alpha(\text{M})=0.00608$ 9 $\alpha(\text{N})=0.001455$ 21; $\alpha(\text{O})=0.000231$ 4; $\alpha(\text{P})=1.606\times 10^{-5}$ 23 $B(\text{M1})(\text{W.u.})=1.8\times 10^{-6}$ 7 Mult.: $A_2=0.32$ 16 (2000Da09). $\alpha(\text{K})\text{exp}=0.024$ 14 (2000Da09) implies E1 or E2. $\alpha(\text{K})=0.01537$ 23; $\alpha(\text{L})=0.00352$ 6; $\alpha(\text{M})=0.000830$ 13 $\alpha(\text{N})=0.000197$ 3; $\alpha(\text{O})=2.90\times 10^{-5}$ 5; $\alpha(\text{P})=1.296\times 10^{-6}$ 19 $B(\text{E2})(\text{W.u.})=0.00029$ 8 $\alpha(\text{K})=0.01235$ 18; $\alpha(\text{L})=0.00266$ 4; $\alpha(\text{M})=0.000623$ 10 $\alpha(\text{N})=0.0001478$ 23; $\alpha(\text{O})=2.20\times 10^{-5}$ 4; $\alpha(\text{P})=1.048\times 10^{-6}$ 16 $B(\text{E2})(\text{W.u.})=9.E-5$ 4 $\alpha(\text{K})=0.0332$ 5; $\alpha(\text{L})=0.00504$ 7; $\alpha(\text{M})=0.001139$ 16 $\alpha(\text{N})=0.000272$ 4; $\alpha(\text{O})=4.33\times 10^{-5}$ 6; $\alpha(\text{P})=3.04\times 10^{-6}$ 5
2807.2	31/2 ⁻	320.0 3	68 18	2487.3	29/2 ⁻	[M1+E2]	0.1696 25	
2810.2	33/2 ⁺	280.3 3	100 15	2529.9	31/2 ⁺	M1+E2	0.243	
2826.3	31/2 ⁺	155.2 3	4.7 16	2671.1	29/2 ⁺	M1	1.247	
		244 & 1		2582.2	29/2 ⁺	[M1]	0.354 7	
		257 1	3.7 11	2569.9	29/2 ⁺	[M1]	0.307 6	
		296.5 3	12 4	2529.9	31/2 ⁺	(M1)	0.208	
		502 1	5.3 11	2324.1	27/2 ⁺	[E2]	0.0200	
		552 1	2.6 11	2274.1	27/2 ⁺	[E2]	0.01580	
		555.3 3	96 16	2271.1	29/2 ⁺	M1	0.0397	

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)								Comments
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\alpha^@$	
2826.3	31/2 ⁺	789.3 3	100 3	2037.0	27/2 ⁺	E2	0.00701	B(M1)(W.u.)=2.3×10 ⁻⁶ 5 Mult.: A ₂ =-0.20 13 and $\alpha(\text{K})_{\text{exp}}=0.036$ 11 (2000Da09). $\alpha(\text{K})=0.00569$ 8; $\alpha(\text{L})=0.001022$ 15; $\alpha(\text{M})=0.000235$ 4 $\alpha(\text{N})=5.60\times 10^{-5}$ 8; $\alpha(\text{O})=8.56\times 10^{-6}$ 12; $\alpha(\text{P})=4.89\times 10^{-7}$ 7 B(E2)(W.u.)=0.00057 11 Mult.: A ₂ =0.42 13 and $\alpha(\text{K})_{\text{exp}}=0.006$ 1 (2000Da09).
2831.2	(31/2 ⁺)	261 & 1	100	2569.9	29/2 ⁺	[M1+E2]	0.294 6	$\alpha(\text{K})=0.245$ 5; $\alpha(\text{L})=0.0381$ 7; $\alpha(\text{M})=0.00863$ 16 $\alpha(\text{N})=0.00206$ 4; $\alpha(\text{O})=0.000327$ 6; $\alpha(\text{P})=2.27\times 10^{-5}$ 4
2839.9	31/2 ⁺	269.9 3	70 14	2569.9	29/2 ⁺	[M1+E2]	0.269	$\alpha(\text{K})=0.224$ 4; $\alpha(\text{L})=0.0347$ 5; $\alpha(\text{M})=0.00787$ 12 $\alpha(\text{N})=0.00188$ 3; $\alpha(\text{O})=0.000298$ 5; $\alpha(\text{P})=2.08\times 10^{-5}$ 3 δ : 0.35 5 (2000Da09) and 0.32 1 (1995Ar18), using J=31/2, assuming K=17/2.
		515.7 3	100 18	2324.1	27/2 ⁺	[E2]	0.0187	$\alpha(\text{K})=0.01444$ 21; $\alpha(\text{L})=0.00325$ 5; $\alpha(\text{M})=0.000764$ 11 $\alpha(\text{N})=0.000181$ 3; $\alpha(\text{O})=2.68\times 10^{-5}$ 4; $\alpha(\text{P})=1.220\times 10^{-6}$ 18
2852.5	33/2 ⁻	26.2 3	100	2826.3	31/2 ⁺	E1	2.67 10	$\alpha(\text{L})=2.07$ 8; $\alpha(\text{M})=0.481$ 17 $\alpha(\text{N})=0.109$ 4; $\alpha(\text{O})=0.0139$ 5; $\alpha(\text{P})=0.000426$ 12 B(E1)(W.u.)=7.1×10 ⁻⁵ 7 Mult.: $\alpha(\text{exp})=3.0$ 10 (2000Da09).
2893.6	31/2 ⁺	311.7 3	20.5 23	2582.2	29/2 ⁺	[M1+E2]	0.182	$\alpha(\text{K})=0.1518$ 22; $\alpha(\text{L})=0.0234$ 4; $\alpha(\text{M})=0.00531$ 8 $\alpha(\text{N})=0.001270$ 18; $\alpha(\text{O})=0.000201$ 3; $\alpha(\text{P})=1.403\times 10^{-5}$ 20 δ : 0.19 2 (2000Da09), assuming K=7/2.
		619.3 3	100 21	2274.1	27/2 ⁺	[E2]	0.01204	$\alpha(\text{K})=0.00954$ 14; $\alpha(\text{L})=0.00192$ 3; $\alpha(\text{M})=0.000448$ 7 $\alpha(\text{N})=0.0001063$ 15; $\alpha(\text{O})=1.598\times 10^{-5}$ 23; $\alpha(\text{P})=8.15\times 10^{-7}$ 12
2896.2	(31/2 ⁻)	515.2 3	100	2381.0	27/2 ⁻	[E2]	0.0187	$\alpha(\text{K})=0.01447$ 21; $\alpha(\text{L})=0.00326$ 5; $\alpha(\text{M})=0.000766$ 11 $\alpha(\text{N})=0.000182$ 3; $\alpha(\text{O})=2.69\times 10^{-5}$ 4; $\alpha(\text{P})=1.223\times 10^{-6}$ 18
2956.8	35/2 ⁺	104.2 3	100	2852.5	33/2 ⁻	E1	0.330 6	$\alpha(\text{K})=0.270$ 5; $\alpha(\text{L})=0.0462$ 8; $\alpha(\text{M})=0.01049$ 17 $\alpha(\text{N})=0.00246$ 4; $\alpha(\text{O})=0.000361$ 6; $\alpha(\text{P})=1.80\times 10^{-5}$ 3 B(E1)(W.u.)=7.9×10 ⁻⁵ 18 Mult.: A ₂ =-0.15 6, $\alpha(\text{exp})=0.4$ 1, $\alpha(\text{L})_{\text{exp}}=0.05$ 5, and $\alpha(\text{M})_{\text{exp}}=0.03$ 5 (2000Da09).
2971.1	33/2 ⁻	305.2 3	33 8	2666.0	31/2 ⁻	[M1+E2]	0.193	$\alpha(\text{K})=0.1606$ 23; $\alpha(\text{L})=0.0248$ 4; $\alpha(\text{M})=0.00562$ 8 $\alpha(\text{N})=0.001345$ 20; $\alpha(\text{O})=0.000213$ 3; $\alpha(\text{P})=1.485\times 10^{-5}$ 22 δ : 0.72 17 (2000Da09), assuming K=21/2.
		590.8 3	100 18	2380.4	29/2 ⁻	[E2]	0.01344	$\alpha(\text{K})=0.01060$ 15; $\alpha(\text{L})=0.00219$ 3; $\alpha(\text{M})=0.000512$ 8 $\alpha(\text{N})=0.0001214$ 17; $\alpha(\text{O})=1.82\times 10^{-5}$ 3; $\alpha(\text{P})=9.02\times 10^{-7}$ 13
3000.6	(31/2 ⁻)	434 1 602 1	33 17 100 50	2565.8 2399.0	33/2 ⁻ (27/2 ⁻)	[E2]	0.01286	$\alpha(\text{K})=0.01016$ 15; $\alpha(\text{L})=0.00208$ 3; $\alpha(\text{M})=0.000485$ 8 $\alpha(\text{N})=0.0001151$ 17; $\alpha(\text{O})=1.73\times 10^{-5}$ 3; $\alpha(\text{P})=8.66\times 10^{-7}$ 13
3046.3	33/2 ⁻	1028 1 291.4 3	100 33 91 29	1973.1 2754.9	29/2 ⁻ 31/2 ⁻	[M1+E2]	0.218 4	$\alpha(\text{K})=0.182$ 3; $\alpha(\text{L})=0.0282$ 4; $\alpha(\text{M})=0.00638$ 10 $\alpha(\text{N})=0.001526$ 22; $\alpha(\text{O})=0.000242$ 4; $\alpha(\text{P})=1.684\times 10^{-5}$ 24 δ : 0.36 8 (2000Da09), assuming K=21/2.
		575.5 3	100 24	2470.9	29/2 ⁻	[E2]	0.01430	$\alpha(\text{K})=0.01124$ 16; $\alpha(\text{L})=0.00236$ 4; $\alpha(\text{M})=0.000552$ 8 $\alpha(\text{N})=0.0001309$ 19; $\alpha(\text{O})=1.96\times 10^{-5}$ 3; $\alpha(\text{P})=9.56\times 10^{-7}$ 14

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\alpha^@$	Comments
3048.4	31/2 ⁺	321.2 3	44 7	2727.3	29/2 ⁺	[M1+E2]	0.1679	$\alpha(\text{K})=0.1400$ 20; $\alpha(\text{L})=0.0216$ 3; $\alpha(\text{M})=0.00489$ 7 $\alpha(\text{N})=0.001170$ 17; $\alpha(\text{O})=0.000186$ 3; $\alpha(\text{P})=1.293\times 10^{-5}$ 19 δ : 0.09 1 (1995Ar18), assuming K=5/2.
		630.8 3	100 36	2417.4	27/2 ⁺	[E2]	0.01154	$\alpha(\text{K})=0.00917$ 13; $\alpha(\text{L})=0.00183$ 3; $\alpha(\text{M})=0.000425$ 6 $\alpha(\text{N})=0.0001010$ 15; $\alpha(\text{O})=1.520\times 10^{-5}$ 22; $\alpha(\text{P})=7.83\times 10^{-7}$ 11
3109.5	35/2 ⁺	299.4 3	80 13	2810.2	33/2 ⁺	[M1+E2]	0.203	$\alpha(\text{K})=0.1691$ 25; $\alpha(\text{L})=0.0262$ 4; $\alpha(\text{M})=0.00592$ 9 $\alpha(\text{N})=0.001417$ 21; $\alpha(\text{O})=0.000225$ 4; $\alpha(\text{P})=1.564\times 10^{-5}$ 23 δ : 0.45 6 (2000Da09), assuming K=23/2.
		579.6 3	100 15	2529.9	31/2 ⁺	E2	0.01406	$\alpha(\text{K})=0.01106$ 16; $\alpha(\text{L})=0.00231$ 4; $\alpha(\text{M})=0.000541$ 8 $\alpha(\text{N})=0.0001282$ 18; $\alpha(\text{O})=1.92\times 10^{-5}$ 3; $\alpha(\text{P})=9.41\times 10^{-7}$ 14 Mult.: $A_2=0.21$ 11 (2000Da09).
3129.4	33/2 ⁺	289.4 3	89 19	2839.9	31/2 ⁺	[M1+E2]	0.222	$\alpha(\text{K})=0.185$ 3; $\alpha(\text{L})=0.0287$ 4; $\alpha(\text{M})=0.00650$ 10 $\alpha(\text{N})=0.001555$ 23; $\alpha(\text{O})=0.000246$ 4; $\alpha(\text{P})=1.716\times 10^{-5}$ 25
		559.7 3	100 19	2569.9	29/2 ⁺	E2	0.01528	$\alpha(\text{K})=0.01197$ 17; $\alpha(\text{L})=0.00255$ 4; $\alpha(\text{M})=0.000598$ 9 $\alpha(\text{N})=0.0001419$ 20; $\alpha(\text{O})=2.12\times 10^{-5}$ 3; $\alpha(\text{P})=1.016\times 10^{-6}$ 15 Mult.: $A_2=0.16$ 11 (2000Da09).
3135.3	33/2 ⁻	328.2 3	14 4	2807.2	31/2 ⁻	[M1+E2]	0.1584	$\alpha(\text{K})=0.1321$ 19; $\alpha(\text{L})=0.0204$ 3; $\alpha(\text{M})=0.00461$ 7 $\alpha(\text{N})=0.001104$ 16; $\alpha(\text{O})=0.0001750$ 25; $\alpha(\text{P})=1.220\times 10^{-5}$ 18 δ : 0.15 1 (1995Ar18), assuming K=9/2.
		647.9 3	100 10	2487.3	29/2 ⁻	[E2]	0.01085	$\alpha(\text{K})=0.00865$ 13; $\alpha(\text{L})=0.001700$ 24; $\alpha(\text{M})=0.000395$ 6 $\alpha(\text{N})=9.39\times 10^{-5}$ 14; $\alpha(\text{O})=1.415\times 10^{-5}$ 20; $\alpha(\text{P})=7.39\times 10^{-7}$ 11
3145.5	(33/2 ⁺)	319.2 3	100	2826.3	31/2 ⁺	[M1+E2]	0.1707 25	$\alpha(\text{K})=0.1424$ 21; $\alpha(\text{L})=0.0220$ 4; $\alpha(\text{M})=0.00498$ 7 $\alpha(\text{N})=0.001190$ 17; $\alpha(\text{O})=0.000189$ 3; $\alpha(\text{P})=1.315\times 10^{-5}$ 19
3181.0	(33/2 ⁻)	552.5 3	100	2628.5	(29/2 ⁻)	[E2]	0.01577	$\alpha(\text{K})=0.01232$ 18; $\alpha(\text{L})=0.00265$ 4; $\alpha(\text{M})=0.000622$ 9 $\alpha(\text{N})=0.0001474$ 21; $\alpha(\text{O})=2.19\times 10^{-5}$ 3; $\alpha(\text{P})=1.046\times 10^{-6}$ 15
3189.3	37/2 ⁺	232.5 3	100	2956.8	35/2 ⁺	M1+E2	0.404	$\alpha(\text{K})=0.337$ 5; $\alpha(\text{L})=0.0524$ 8; $\alpha(\text{M})=0.01187$ 18 $\alpha(\text{N})=0.00284$ 5; $\alpha(\text{O})=0.000450$ 7; $\alpha(\text{P})=3.13\times 10^{-5}$ 5 Mult.: $A_2=-0.20$ 12, $\alpha(\text{exp})=0.45$ 4 and $\alpha(\text{K})\text{exp}=0.18$ 3 (2000Da09). Approximately 69% 232.5 γ and 31% 234.1 γ .
3210.0	33/2 ⁺	316.5 3	46 8	2893.6	31/2 ⁺	[M1+E2]	0.1747	$\alpha(\text{K})=0.1457$ 21; $\alpha(\text{L})=0.0225$ 4; $\alpha(\text{M})=0.00509$ 8 $\alpha(\text{N})=0.001218$ 18; $\alpha(\text{O})=0.000193$ 3; $\alpha(\text{P})=1.346\times 10^{-5}$ 20 δ : 0.12 2 (2000Da09), assuming K=7/2.
		627.8 3	100 23	2582.2	29/2 ⁺	[E2]	0.01166	$\alpha(\text{K})=0.00926$ 13; $\alpha(\text{L})=0.00185$ 3; $\alpha(\text{M})=0.000431$ 6 $\alpha(\text{N})=0.0001024$ 15; $\alpha(\text{O})=1.540\times 10^{-5}$ 22; $\alpha(\text{P})=7.91\times 10^{-7}$ 12
3215.6	35/2 ⁻	363.2 3	100	2852.5	33/2 ⁻	M1+E2	0.1208 18	$\alpha(\text{K})=0.1008$ 15; $\alpha(\text{L})=0.01551$ 22; $\alpha(\text{M})=0.00351$ 5 $\alpha(\text{N})=0.000840$ 12; $\alpha(\text{O})=0.0001332$ 19; $\alpha(\text{P})=9.29\times 10^{-6}$ 14 Mult.: $A_2=0.22$ 5 (2000Da09). The value overlaps with that for the 363.4 γ . $\alpha(\text{K})\text{exp}=0.08$ 2 (2000Da09).
3223.2	37/2 ⁻	657.4 3	100	2565.8	33/2 ⁻	[E2]	0.01050	$\alpha(\text{K})=0.00838$ 12; $\alpha(\text{L})=0.001635$ 23; $\alpha(\text{M})=0.000380$ 6 $\alpha(\text{N})=9.02\times 10^{-5}$ 13; $\alpha(\text{O})=1.362\times 10^{-5}$ 20; $\alpha(\text{P})=7.17\times 10^{-7}$ 10

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)								
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\alpha^@$	Comments
3287.0	(37/2) ⁻	71.5 3	7 5	3215.6	35/2 ⁻	M1	11.40 21	$\alpha(\text{K})=9.45$ 18; $\alpha(\text{L})=1.51$ 3; $\alpha(\text{M})=0.343$ 7 $\alpha(\text{N})=0.0822$ 16; $\alpha(\text{O})=0.01300$ 25; $\alpha(\text{P})=0.000899$ 17 B(M1)(W.u.)>0.0016 Mult.: $\alpha(\text{exp})=7.0$ 20 (2000Da09).
		330.1 3	100 19	2956.8	35/2 ⁺	[E1]	0.01758	$\alpha(\text{K})=0.01472$ 21; $\alpha(\text{L})=0.00222$ 4; $\alpha(\text{M})=0.000501$ 8 $\alpha(\text{N})=0.0001190$ 17; $\alpha(\text{O})=1.83\times 10^{-5}$ 3; $\alpha(\text{P})=1.135\times 10^{-6}$ 16 B(E1)(W.u.)>2.3×10 ⁻⁶ Mult.: Note that A ₂ =0.20 19 in 2000Da09, but this value is in disagreement with that expected for a pure E1 transition.
3294.4	35/2 ⁻	323.4 3	36 14	2971.1	33/2 ⁻	[M1+E2]	0.1648 24	$\alpha(\text{K})=0.1375$ 20; $\alpha(\text{L})=0.0212$ 3; $\alpha(\text{M})=0.00480$ 7 $\alpha(\text{N})=0.001149$ 17; $\alpha(\text{O})=0.000182$ 3; $\alpha(\text{P})=1.270\times 10^{-5}$ 18 δ : 0.58 19 (2000Da09), assuming K=21/2.
		628.3 3	100 21	2666.0	31/2 ⁻	[E2]	0.01164	$\alpha(\text{K})=0.00925$ 13; $\alpha(\text{L})=0.00185$ 3; $\alpha(\text{M})=0.000430$ 6 $\alpha(\text{N})=0.0001021$ 15; $\alpha(\text{O})=1.537\times 10^{-5}$ 22; $\alpha(\text{P})=7.90\times 10^{-7}$ 11
3345.6	35/2 ⁻	299.4 3	100 29	3046.3	33/2 ⁻	[M1+E2]	0.203	$\alpha(\text{K})=0.1691$ 25; $\alpha(\text{L})=0.0262$ 4; $\alpha(\text{M})=0.00592$ 9 $\alpha(\text{N})=0.001417$ 21; $\alpha(\text{O})=0.000225$ 4; $\alpha(\text{P})=1.564\times 10^{-5}$ 23 δ : 0.28 7 (2000Da09), assuming K=21/2.
		590.6 3	86 29	2754.9	31/2 ⁻	[E2]	0.01345	$\alpha(\text{K})=0.01060$ 15; $\alpha(\text{L})=0.00219$ 3; $\alpha(\text{M})=0.000512$ 8 $\alpha(\text{N})=0.0001215$ 18; $\alpha(\text{O})=1.82\times 10^{-5}$ 3; $\alpha(\text{P})=9.03\times 10^{-7}$ 13
3373.2	(33/2 ⁺)	645.9 3	100	2727.3	29/2 ⁺	[E2]	0.01093	$\alpha(\text{K})=0.00871$ 13; $\alpha(\text{L})=0.001714$ 24; $\alpha(\text{M})=0.000399$ 6 $\alpha(\text{N})=9.47\times 10^{-5}$ 14; $\alpha(\text{O})=1.427\times 10^{-5}$ 20; $\alpha(\text{P})=7.44\times 10^{-7}$ 11
3426.0	37/2 ⁺	316.6 3	83 13	3109.5	35/2 ⁺	[M1+E2]	0.1745	$\alpha(\text{K})=0.1455$ 21; $\alpha(\text{L})=0.0225$ 4; $\alpha(\text{M})=0.00509$ 8 $\alpha(\text{N})=0.001217$ 18; $\alpha(\text{O})=0.000193$ 3; $\alpha(\text{P})=1.345\times 10^{-5}$ 20 δ : 0.35 5 (2000Da09), assuming K=23/2.
		615.8 3	100 23	2810.2	33/2 ⁺	[E2]	0.01220	$\alpha(\text{K})=0.00966$ 14; $\alpha(\text{L})=0.00195$ 3; $\alpha(\text{M})=0.000455$ 7 $\alpha(\text{N})=0.0001080$ 16; $\alpha(\text{O})=1.622\times 10^{-5}$ 23; $\alpha(\text{P})=8.25\times 10^{-7}$ 12
3438.1	35/2 ⁺	308.8 3	59 10	3129.4	33/2 ⁺	[M1+E2]	0.187	$\alpha(\text{K})=0.1556$ 23; $\alpha(\text{L})=0.0240$ 4; $\alpha(\text{M})=0.00544$ 8 $\alpha(\text{N})=0.001303$ 19; $\alpha(\text{O})=0.000207$ 3; $\alpha(\text{P})=1.439\times 10^{-5}$ 21 δ : 0.30 5 (2000Da09) and 0.37 5 (1995Ar18), using J=35/2, assuming K=17/2.
		598.2 3	100 24	2839.9	31/2 ⁺	[E2]	0.01305	$\alpha(\text{K})=0.01031$ 15; $\alpha(\text{L})=0.00212$ 3; $\alpha(\text{M})=0.000494$ 7 $\alpha(\text{N})=0.0001172$ 17; $\alpha(\text{O})=1.756\times 10^{-5}$ 25; $\alpha(\text{P})=8.78\times 10^{-7}$ 13
3458.2	(35/2 ⁻)	323& 1		3135.3	33/2 ⁻	[M1+E2]	0.165 3	$\alpha(\text{K})=0.1379$ 23; $\alpha(\text{L})=0.0213$ 4; $\alpha(\text{M})=0.00482$ 8 $\alpha(\text{N})=0.001153$ 19; $\alpha(\text{O})=0.000183$ 3; $\alpha(\text{P})=1.274\times 10^{-5}$ 21
		651.0 3	100	2807.2	31/2 ⁻	[E2]	0.01073	$\alpha(\text{K})=0.00856$ 12; $\alpha(\text{L})=0.001678$ 24; $\alpha(\text{M})=0.000390$ 6 $\alpha(\text{N})=9.26\times 10^{-5}$ 13; $\alpha(\text{O})=1.397\times 10^{-5}$ 20; $\alpha(\text{P})=7.32\times 10^{-7}$ 11
3480.7	(35/2 ⁻)	584.5 3	100	2896.2	(31/2 ⁻)	[E2]	0.01378	$\alpha(\text{K})=0.01085$ 16; $\alpha(\text{L})=0.00226$ 4; $\alpha(\text{M})=0.000528$ 8 $\alpha(\text{N})=0.0001252$ 18; $\alpha(\text{O})=1.87\times 10^{-5}$ 3; $\alpha(\text{P})=9.24\times 10^{-7}$ 13
3483.7?	(35/2 ⁺)	338& 1	100	3145.5	(33/2 ⁺)	[M1+E2]	0.1464 24	$\alpha(\text{K})=0.1221$ 20; $\alpha(\text{L})=0.0188$ 3; $\alpha(\text{M})=0.00426$ 7 $\alpha(\text{N})=0.001019$ 17; $\alpha(\text{O})=0.000162$ 3; $\alpha(\text{P})=1.127\times 10^{-5}$ 19
3511.0	39/2 ⁺	321.7 3	100 11	3189.3	37/2 ⁺	M1+E2	0.1672	$\alpha(\text{K})=0.1394$ 20; $\alpha(\text{L})=0.0215$ 3; $\alpha(\text{M})=0.00487$ 7 $\alpha(\text{N})=0.001166$ 17; $\alpha(\text{O})=0.000185$ 3; $\alpha(\text{P})=1.288\times 10^{-5}$ 19

Adopted Levels, Gammas (continued)

 $\gamma(^{177}\text{Ta})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\alpha^@$	Comments
								Mult.: $A_2 = -0.05$ 21, $\alpha(K)\text{exp} = 0.18$ 3 and $\alpha(L)\text{exp} = 0.031$ 8 (2000Da09). δ : 0.24 4 (2000Da09), assuming $K = 35/2$. $\alpha(K) = 0.01225$ 18; $\alpha(L) = 0.00263$ 4; $\alpha(M) = 0.000617$ 10 $\alpha(N) = 0.0001462$ 22; $\alpha(O) = 2.18 \times 10^{-5}$ 4; $\alpha(P) = 1.040 \times 10^{-6}$ 16 $\alpha(K) = 0.00896$ 13; $\alpha(L) = 0.001777$ 25; $\alpha(M) = 0.000413$ 6 $\alpha(N) = 9.82 \times 10^{-5}$ 14; $\alpha(O) = 1.478 \times 10^{-5}$ 21; $\alpha(P) = 7.66 \times 10^{-7}$ 11 $\alpha(K) = 0.0933$ 14; $\alpha(L) = 0.01434$ 21; $\alpha(M) = 0.00324$ 5 $\alpha(N) = 0.000776$ 11; $\alpha(O) = 0.0001231$ 18; $\alpha(P) = 8.59 \times 10^{-6}$ 13 δ : 0.6 4 (2000Da09), assuming $K = 37/2$. $\alpha(K) = 0.00657$ 10; $\alpha(L) = 0.001214$ 18; $\alpha(M) = 0.000280$ 4 $\alpha(N) = 6.67 \times 10^{-5}$ 10; $\alpha(O) = 1.014 \times 10^{-5}$ 15; $\alpha(P) = 5.63 \times 10^{-7}$ 8 $\alpha(K) = 0.1314$ 19; $\alpha(L) = 0.0203$ 3; $\alpha(M) = 0.00459$ 7 $\alpha(N) = 0.001098$ 16; $\alpha(O) = 0.0001740$ 25; $\alpha(P) = 1.213 \times 10^{-5}$ 18 $\alpha(K) = 0.00825$ 12; $\alpha(L) = 0.001605$ 23; $\alpha(M) = 0.000373$ 6 $\alpha(N) = 8.85 \times 10^{-5}$ 13; $\alpha(O) = 1.337 \times 10^{-5}$ 19; $\alpha(P) = 7.06 \times 10^{-7}$ 10 $\alpha(K) = 0.1566$ 23; $\alpha(L) = 0.0242$ 4; $\alpha(M) = 0.00548$ 8 $\alpha(N) = 0.001311$ 19; $\alpha(O) = 0.000208$ 3; $\alpha(P) = 1.447 \times 10^{-5}$ 21 δ : 0.14 3 (2000Da09), assuming $K = 21/2$. $\alpha(K) = 0.00998$ 14; $\alpha(L) = 0.00203$ 3; $\alpha(M) = 0.000474$ 7 $\alpha(N) = 0.0001125$ 16; $\alpha(O) = 1.687 \times 10^{-5}$ 24; $\alpha(P) = 8.51 \times 10^{-7}$ 12 $\alpha(K) = 0.00828$ 12; $\alpha(L) = 0.001611$ 24; $\alpha(M) = 0.000374$ 6 $\alpha(N) = 8.89 \times 10^{-5}$ 13; $\alpha(O) = 1.342 \times 10^{-5}$ 20; $\alpha(P) = 7.08 \times 10^{-7}$ 11 $\alpha(K) = 0.00600$ 9; $\alpha(L) = 0.000890$ 13; $\alpha(M) = 0.000201$ 3 $\alpha(N) = 4.80 \times 10^{-5}$ 7; $\alpha(O) = 7.63 \times 10^{-6}$ 11; $\alpha(P) = 5.41 \times 10^{-7}$ 8
3511.0	39/2 ⁺	554 1	2.7 9	2956.8	35/2 ⁺	[E2]	0.01566	
3531.0	(35/2 ⁺)	637.4 3	100	2893.6	31/2 ⁺	[E2]	0.01126	
3589.6	37/2 ⁻	374.0 3	100 25	3215.6	35/2 ⁻	[M1+E2]	0.1118	
		737 1	29 21	2852.5	33/2 ⁻	[E2]	0.00814	
3615.7	(39/2 ⁻)	328.9 3	100	3287.0	(37/2 ⁻)	[M1+E2]	0.1575 23	
3633.1	(37/2 ⁻)	662.0 3	100	2971.1	33/2 ⁻	[E2]	0.01033	
3653.5	37/2 ⁻	308.1 3	100 23	3345.6	35/2 ⁻	[M1+E2]	0.188	
		607.0 3	27 10	3046.3	33/2 ⁻	[E2]	0.01261	
3661.6	(35/2 ⁻)	661 1	100 50	3000.6	(31/2 ⁻)	[E2]	0.01037	
		1096 ^{&} 1	99 33	2565.8	33/2 ⁻	[M1+E2]	0.00715 11	
3707.5?	(35/2 ⁺)	659 ^{&} 1	100	3048.4	31/2 ⁺			
3757.7	39/2 ⁺	331.7 3	67 7	3426.0	37/2 ⁺	[M1+E2]	0.1540	
		648.2 3	100 26	3109.5	35/2 ⁺	[E2]	0.01084	
3764.3	37/2 ⁺	326.3 3	35 10	3438.1	35/2 ⁺	[M1+E2]	0.1609	
		634.7 3	100 40	3129.4	33/2 ⁺	(E2)	0.01137	
3779.1?	(37/2 ⁻)	598.0 ^{&} 3	100	3181.0	(33/2 ⁻)	[E2]	0.01306	
3803.0	(37/2 ⁻)	667.7 3	100	3135.3	33/2 ⁻	[E2]	0.01013	
3859.8	(37/2 ⁺)	649.8 3	100	3210.0	33/2 ⁺	[E2]	0.01078	

Adopted Levels, Gammas (continued)

 $\gamma(^{177}\text{Ta})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\alpha^@$	Comments
3867.9	41/2 ⁺	357.0 3	100 13	3511.0	39/2 ⁺	M1+E2	0.1265	$\alpha(\text{K})=0.1056$ 15; $\alpha(\text{L})=0.01624$ 23; $\alpha(\text{M})=0.00368$ 6 $\alpha(\text{N})=0.000880$ 13; $\alpha(\text{O})=0.0001395$ 20; $\alpha(\text{P})=9.73\times 10^{-6}$ 14 Mult.: $A_2=0.33$ 7 and $\alpha(\text{K})_{\text{exp}}=0.120$ 17 (2000Da09). δ : 0.22 4 (2000Da09), assuming K=35/2.
		678.6 3	7.2 24	3189.3	37/2 ⁺	(E2)	0.00977	$\alpha(\text{K})=0.00782$ 11; $\alpha(\text{L})=0.001503$ 22; $\alpha(\text{M})=0.000349$ 5 $\alpha(\text{N})=8.28\times 10^{-5}$ 12; $\alpha(\text{O})=1.253\times 10^{-5}$ 18; $\alpha(\text{P})=6.70\times 10^{-7}$ 10 Mult.: $A_2=0.17$ 9 (2000Da09).
3940.0	41/2 ⁻	716.8 3	100	3223.2	37/2 ⁻	[E2]	0.00865	$\alpha(\text{K})=0.00696$ 10; $\alpha(\text{L})=0.001303$ 19; $\alpha(\text{M})=0.000301$ 5 $\alpha(\text{N})=7.16\times 10^{-5}$ 10; $\alpha(\text{O})=1.088\times 10^{-5}$ 16; $\alpha(\text{P})=5.97\times 10^{-7}$ 9
3958.4	(41/2 ⁻)	342.9 3	100 14	3615.7	(39/2 ⁻)	[M1+E2]	0.1409	$\alpha(\text{K})=0.1175$ 17; $\alpha(\text{L})=0.0181$ 3; $\alpha(\text{M})=0.00410$ 6 $\alpha(\text{N})=0.000981$ 14; $\alpha(\text{O})=0.0001555$ 22; $\alpha(\text{P})=1.084\times 10^{-5}$ 16 δ : 1.9 3 (2000Da09), assuming K=37/2.
		671.2 3	43 11	3287.0	(37/2 ⁻)	[E2]	0.01002	$\alpha(\text{K})=0.00801$ 12; $\alpha(\text{L})=0.001547$ 22; $\alpha(\text{M})=0.000359$ 5 $\alpha(\text{N})=8.53\times 10^{-5}$ 12; $\alpha(\text{O})=1.289\times 10^{-5}$ 19; $\alpha(\text{P})=6.86\times 10^{-7}$ 10
3968.5	39/2 ⁻	315& 1 622.9 3	100	3653.5 37/2 ⁻ 3345.6 35/2 ⁻	[E2]	0.01188	$\alpha(\text{K})=0.00942$ 14; $\alpha(\text{L})=0.00189$ 3; $\alpha(\text{M})=0.000441$ 7 $\alpha(\text{N})=0.0001046$ 15; $\alpha(\text{O})=1.573\times 10^{-5}$ 23; $\alpha(\text{P})=8.05\times 10^{-7}$ 12	
3977.7?	(39/2 ⁻)	388& 1	100	3589.6	37/2 ⁻	[M1+E2]	0.1014 16	$\alpha(\text{K})=0.0846$ 14; $\alpha(\text{L})=0.01299$ 21; $\alpha(\text{M})=0.00294$ 5 $\alpha(\text{N})=0.000703$ 11; $\alpha(\text{O})=0.0001115$ 18; $\alpha(\text{P})=7.79\times 10^{-6}$ 13
3987.6	(39/2 ⁻)	693.2 3	100	3294.4	35/2 ⁻	[E2]	0.00932	$\alpha(\text{K})=0.00748$ 11; $\alpha(\text{L})=0.001421$ 20; $\alpha(\text{M})=0.000329$ 5 $\alpha(\text{N})=7.82\times 10^{-5}$ 11; $\alpha(\text{O})=1.186\times 10^{-5}$ 17; $\alpha(\text{P})=6.40\times 10^{-7}$ 9
4059.3?	(37/2 ⁺)	686& 1	100	3373.2 (33/2 ⁺)				E_γ : Others: a tentative $E_\gamma=690$ keV is reported by 1993Ri09.
4093.2	(39/2 ⁻)	635.0 3	100	3458.2 (35/2 ⁻)	[E2]	0.01136	$\alpha(\text{K})=0.00903$ 13; $\alpha(\text{L})=0.00180$ 3; $\alpha(\text{M})=0.000418$ 6 $\alpha(\text{N})=9.92\times 10^{-5}$ 14; $\alpha(\text{O})=1.493\times 10^{-5}$ 21; $\alpha(\text{P})=7.72\times 10^{-7}$ 11	
4103.1	(41/2 ⁺)	677.1 3	100	3426.0	37/2 ⁺	[E2]	0.00982	$\alpha(\text{K})=0.00786$ 11; $\alpha(\text{L})=0.001512$ 22; $\alpha(\text{M})=0.000351$ 5 $\alpha(\text{N})=8.33\times 10^{-5}$ 12; $\alpha(\text{O})=1.260\times 10^{-5}$ 18; $\alpha(\text{P})=6.73\times 10^{-7}$ 10
4195.7	(39/2 ⁺)	664.7 3	100	3531.0 (35/2 ⁺)	[E2]	0.01024	$\alpha(\text{K})=0.00818$ 12; $\alpha(\text{L})=0.001588$ 23; $\alpha(\text{M})=0.000369$ 6 $\alpha(\text{N})=8.75\times 10^{-5}$ 13; $\alpha(\text{O})=1.323\times 10^{-5}$ 19; $\alpha(\text{P})=7.00\times 10^{-7}$ 10	
4248.6	43/2 ⁺	380.8 3	100 18	3867.9	41/2 ⁺	[M1+E2]	0.1065	$\alpha(\text{K})=0.0889$ 13; $\alpha(\text{L})=0.01366$ 20; $\alpha(\text{M})=0.00309$ 5 $\alpha(\text{N})=0.000739$ 11; $\alpha(\text{O})=0.0001173$ 17; $\alpha(\text{P})=8.19\times 10^{-6}$ 12 δ : 0.34 6 (2000Da09), assuming K=35/2.
		737.7 3	29 7	3511.0	39/2 ⁺	[E2]	0.00812	$\alpha(\text{K})=0.00655$ 10; $\alpha(\text{L})=0.001211$ 17; $\alpha(\text{M})=0.000280$ 4 $\alpha(\text{N})=6.65\times 10^{-5}$ 10; $\alpha(\text{O})=1.012\times 10^{-5}$ 15; $\alpha(\text{P})=5.62\times 10^{-7}$ 8
4316.7	(43/2 ⁻)	358.5 3	100 33	3958.4	(41/2 ⁻)	[M1+E2]	0.1251	$\alpha(\text{K})=0.1044$ 15; $\alpha(\text{L})=0.01606$ 23; $\alpha(\text{M})=0.00363$ 6 $\alpha(\text{N})=0.000870$ 13; $\alpha(\text{O})=0.0001379$ 20; $\alpha(\text{P})=9.62\times 10^{-6}$ 14 δ : 0.79 36 (2000Da09), assuming K=37/2.
		700.9 3	67 22	3615.7	(39/2 ⁻)	[E2]	0.00909	$\alpha(\text{K})=0.00730$ 11; $\alpha(\text{L})=0.001381$ 20; $\alpha(\text{M})=0.000320$ 5 $\alpha(\text{N})=7.60\times 10^{-5}$ 11; $\alpha(\text{O})=1.153\times 10^{-5}$ 17; $\alpha(\text{P})=6.26\times 10^{-7}$ 9
4329.4	43/2 ⁺	461.5 3	100 14	3867.9	41/2 ⁺	M1	0.0642	$\alpha(\text{K})=0.0537$ 8; $\alpha(\text{L})=0.00819$ 12; $\alpha(\text{M})=0.00185$ 3 $\alpha(\text{N})=0.000443$ 7; $\alpha(\text{O})=7.03\times 10^{-5}$ 10; $\alpha(\text{P})=4.92\times 10^{-6}$ 7

Adopted Levels, Gammas (continued)

$\gamma(^{177}\text{Ta})$ (continued)								
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$L_\gamma^\dagger$	E_f	J_f^π	Mult. [†]	$\alpha^@$	Comments
								B(M1)(W.u.)=0.00027 9 Mult.: $A_2=0.16$ 6 (2000Da09). The value overlaps with that for the 461.9 γ . $\alpha(\text{K})_{\text{exp}}=0.051$ 7 and $\alpha(\text{L})_{\text{exp}}=0.007$ 2 (2000Da09). $\alpha(\text{K})=0.00529$ 8; $\alpha(\text{L})=0.000935$ 14; $\alpha(\text{M})=0.000215$ 3 $\alpha(\text{N})=5.12\times 10^{-5}$ 8; $\alpha(\text{O})=7.84\times 10^{-6}$ 11; $\alpha(\text{P})=4.54\times 10^{-7}$ 7 B(E2)(W.u.)=0.0043 16
4329.4	43/2 ⁺	818.3 3	13.6 23	3511.0	39/2 ⁺	[E2]	0.00650	$\alpha(\text{K})=0.00691$ 10; $\alpha(\text{L})=0.001291$ 19; $\alpha(\text{M})=0.000299$ 5 $\alpha(\text{N})=7.10\times 10^{-5}$ 10; $\alpha(\text{O})=1.079\times 10^{-5}$ 16; $\alpha(\text{P})=5.93\times 10^{-7}$ 9
4352.4	(41/2 ⁻)	719.3 3	100	3633.1	(37/2 ⁻)	[E2]	0.00858	E_γ : Others: a tentative $E_\gamma=717.6$ keV is reported by 1993Ri09.
4425.8?	(39/2 ⁺)	718.3& 3	100	3707.5?	(35/2 ⁺)			$\alpha(\text{K})=0.00729$ 11; $\alpha(\text{L})=0.001377$ 20; $\alpha(\text{M})=0.000319$ 5
4459.3	(43/2 ⁺)	701.6 3	100	3757.7	39/2 ⁺	[E2]	0.00907	$\alpha(\text{N})=7.58\times 10^{-5}$ 11; $\alpha(\text{O})=1.150\times 10^{-5}$ 17; $\alpha(\text{P})=6.24\times 10^{-7}$ 9
4504.8	(41/2 ⁻)	701.8 3	100	3803.0	(37/2 ⁻)	[E2]	0.00906	$\alpha(\text{K})=0.00728$ 11; $\alpha(\text{L})=0.001376$ 20; $\alpha(\text{M})=0.000319$ 5
4541.3	(41/2 ⁺)	681.5 3	100	3859.8	(37/2 ⁺)	[E2]	0.00968	$\alpha(\text{N})=7.57\times 10^{-5}$ 11; $\alpha(\text{O})=1.149\times 10^{-5}$ 17; $\alpha(\text{P})=6.24\times 10^{-7}$ 9
4570.2	45/2 ⁻	240.8 3	100	4329.4	43/2 ⁺	E1	0.0380	$\alpha(\text{K})=0.00775$ 11; $\alpha(\text{L})=0.001486$ 21; $\alpha(\text{M})=0.000345$ 5 $\alpha(\text{N})=8.19\times 10^{-5}$ 12; $\alpha(\text{O})=1.239\times 10^{-5}$ 18; $\alpha(\text{P})=6.64\times 10^{-7}$ 10
								$\alpha(\text{K})=0.0317$ 5; $\alpha(\text{L})=0.00491$ 7; $\alpha(\text{M})=0.001108$ 16 $\alpha(\text{N})=0.000262$ 4; $\alpha(\text{O})=4.01\times 10^{-5}$ 6; $\alpha(\text{P})=2.37\times 10^{-6}$ 4 B(E1)(W.u.)>1.4 $\times 10^{-5}$ Mult.: $A_2=0.01$ 10 (2000Da09). The value overlaps with that for the
4647.2	45/2 ⁺	398.7 3	100 21	4248.6	43/2 ⁺	[M1+E2]	0.0943	240.9 γ . $\alpha(\text{exp})=0.043$ 4 and $\alpha(\text{K})_{\text{exp}}=0.059$ 21 (2000Da09). $\alpha(\text{K})=0.0788$ 12; $\alpha(\text{L})=0.01208$ 17; $\alpha(\text{M})=0.00273$ 4 $\alpha(\text{N})=0.000654$ 10; $\alpha(\text{O})=0.0001037$ 15; $\alpha(\text{P})=7.25\times 10^{-6}$ 11
		779.0 3	29 7	3867.9	41/2 ⁺	[E2]	0.00722	δ : 0.28 5 (2000Da09), assuming $K=35/2$. $\alpha(\text{K})=0.00585$ 9; $\alpha(\text{L})=0.001056$ 15; $\alpha(\text{M})=0.000243$ 4
4656.3	49/2 ⁻	86.1 3	100	4570.2	45/2 ⁻	E2	6.77 14	$\alpha(\text{N})=5.79\times 10^{-5}$ 9; $\alpha(\text{O})=8.84\times 10^{-6}$ 13; $\alpha(\text{P})=5.02\times 10^{-7}$ 7 $\alpha(\text{K})=1.149$ 17; $\alpha(\text{L})=4.27$ 10; $\alpha(\text{M})=1.073$ 24 $\alpha(\text{N})=0.251$ 6; $\alpha(\text{O})=0.0329$ 8; $\alpha(\text{P})=9.19\times 10^{-5}$ 15 B(E2)(W.u.)=0.00196 8
4691.6	(45/2 ⁻)	375.0 3	100 25	4316.7	(43/2 ⁻)	[M1+E2]	0.1110	Mult.: $\alpha(\text{exp})=7.3$ 9 and $\alpha(\text{L})_{\text{exp}}=4.0$ 10 (2000Da09). $\alpha(\text{K})=0.0926$ 14; $\alpha(\text{L})=0.01423$ 21; $\alpha(\text{M})=0.00322$ 5 $\alpha(\text{N})=0.000771$ 11; $\alpha(\text{O})=0.0001222$ 18; $\alpha(\text{P})=8.53\times 10^{-6}$ 12
		733.0 3	63 25	3958.4	(41/2 ⁻)	[E2]	0.00823	δ : 0.55 17 (2000Da09), assuming $K=37/2$. $\alpha(\text{K})=0.00664$ 10; $\alpha(\text{L})=0.001231$ 18; $\alpha(\text{M})=0.000284$ 4
4715.2	45/2 ⁻	775.2 3	100	3940.0	41/2 ⁻	[E2]	0.00729	$\alpha(\text{N})=6.76\times 10^{-5}$ 10; $\alpha(\text{O})=1.028\times 10^{-5}$ 15; $\alpha(\text{P})=5.70\times 10^{-7}$ 8 $\alpha(\text{K})=0.00591$ 9; $\alpha(\text{L})=0.001069$ 15; $\alpha(\text{M})=0.000246$ 4
4727.6	(43/2 ⁻)	740.0 3	100	3987.6	(39/2 ⁻)	[E2]	0.00807	$\alpha(\text{N})=5.86\times 10^{-5}$ 9; $\alpha(\text{O})=8.95\times 10^{-6}$ 13; $\alpha(\text{P})=5.07\times 10^{-7}$ 8 $\alpha(\text{K})=0.00651$ 10; $\alpha(\text{L})=0.001201$ 17; $\alpha(\text{M})=0.000277$ 4
4740.4?	(45/2 ⁺)	411& 1	100	4329.4	43/2 ⁺	[M1+E2]	0.0871 14	$\alpha(\text{N})=6.60\times 10^{-5}$ 10; $\alpha(\text{O})=1.004\times 10^{-5}$ 14; $\alpha(\text{P})=5.59\times 10^{-7}$ 8 $\alpha(\text{K})=0.0727$ 12; $\alpha(\text{L})=0.01114$ 18; $\alpha(\text{M})=0.00252$ 4
4825.3?	(45/2 ⁺)	722& 1	100	4103.1	(41/2 ⁺)	[E2]	0.00851	$\alpha(\text{N})=0.000603$ 10; $\alpha(\text{O})=9.56\times 10^{-5}$ 15; $\alpha(\text{P})=6.68\times 10^{-6}$ 11 $\alpha(\text{K})=0.00686$ 10; $\alpha(\text{L})=0.001279$ 19; $\alpha(\text{M})=0.000296$ 5 $\alpha(\text{N})=7.03\times 10^{-5}$ 11; $\alpha(\text{O})=1.069\times 10^{-5}$ 16; $\alpha(\text{P})=5.88\times 10^{-7}$ 9

Adopted Levels, Gammas (continued)

 $\gamma(^{177}\text{Ta})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	$\alpha^@$	Comments
4900.9?	(43/2 ⁺)	705& I	100	4195.7	(39/2 ⁺)			
4983.2	(47/2 ⁻)	413 I	100	4570.2	45/2 ⁻	[M1+E2]	0.0860 14	$\alpha(\text{K})=0.0718$ 11; $\alpha(\text{L})=0.01100$ 17; $\alpha(\text{M})=0.00249$ 4 $\alpha(\text{N})=0.000595$ 10; $\alpha(\text{O})=9.44\times 10^{-5}$ 15; $\alpha(\text{P})=6.60\times 10^{-6}$ 11 $\alpha(\text{K})=0.0727$ 11; $\alpha(\text{L})=0.01113$ 16; $\alpha(\text{M})=0.00252$ 4 $\alpha(\text{N})=0.000603$ 9; $\alpha(\text{O})=9.56\times 10^{-5}$ 14; $\alpha(\text{P})=6.68\times 10^{-6}$ 10 δ : 0.28 5 (2000Da09), assuming K=35/2.
5058.3	47/2 ⁺	411.1 3	100 18	4647.2	45/2 ⁺	[M1+E2]	0.0870	$\alpha(\text{K})=0.00540$ 8; $\alpha(\text{L})=0.000959$ 14; $\alpha(\text{M})=0.000221$ 3 $\alpha(\text{N})=5.25\times 10^{-5}$ 8; $\alpha(\text{O})=8.04\times 10^{-6}$ 12; $\alpha(\text{P})=4.64\times 10^{-7}$ 7 $\alpha(\text{K})=0.0827$ 12; $\alpha(\text{L})=0.01269$ 18; $\alpha(\text{M})=0.00287$ 4 $\alpha(\text{N})=0.000687$ 10; $\alpha(\text{O})=0.0001090$ 16; $\alpha(\text{P})=7.61\times 10^{-6}$ 11
		809.8 3	36 9	4248.6	43/2 ⁺	[E2]	0.00664	
5083.0	(47/2 ⁻)	391.4 3	100	4691.6	(45/2 ⁻)	[M1+E2]	0.0991	
		766& I		4316.7	(43/2 ⁻)			
5195.5?	(47/2 ⁺)	736& I	100	4459.3	(43/2 ⁺)	[E2]	0.00816	$\alpha(\text{K})=0.00658$ 10; $\alpha(\text{L})=0.001218$ 18; $\alpha(\text{M})=0.000281$ 4 $\alpha(\text{N})=6.69\times 10^{-5}$ 10; $\alpha(\text{O})=1.018\times 10^{-5}$ 15; $\alpha(\text{P})=5.65\times 10^{-7}$ 8
5270.9	(45/2 ⁺)	729.6 3	100	4541.3	(41/2 ⁺)	[E2]	0.00832	$\alpha(\text{K})=0.00671$ 10; $\alpha(\text{L})=0.001245$ 18; $\alpha(\text{M})=0.000288$ 4 $\alpha(\text{N})=6.84\times 10^{-5}$ 10; $\alpha(\text{O})=1.041\times 10^{-5}$ 15; $\alpha(\text{P})=5.75\times 10^{-7}$ 8
5413.2?	(49/2 ⁻)	430& I	100	4983.2	(47/2 ⁻)	[M1+E2]	0.0773 12	$\alpha(\text{K})=0.0646$ 10; $\alpha(\text{L})=0.00988$ 16; $\alpha(\text{M})=0.00223$ 4 $\alpha(\text{N})=0.000535$ 9; $\alpha(\text{O})=8.48\times 10^{-5}$ 13; $\alpha(\text{P})=5.93\times 10^{-6}$ 9
5478.8	(49/2 ⁺)	420.5 3	100	5058.3	47/2 ⁺	[M1+E2]	0.0820	$\alpha(\text{K})=0.0685$ 10; $\alpha(\text{L})=0.01048$ 15; $\alpha(\text{M})=0.00237$ 4 $\alpha(\text{N})=0.000567$ 8; $\alpha(\text{O})=9.00\times 10^{-5}$ 13; $\alpha(\text{P})=6.29\times 10^{-6}$ 9
5547.9	(49/2 ⁻)	832.7 3	100	4715.2	45/2 ⁻	[E2]	0.00626	$\alpha(\text{K})=0.00510$ 8; $\alpha(\text{L})=0.000897$ 13; $\alpha(\text{M})=0.000206$ 3 $\alpha(\text{N})=4.90\times 10^{-5}$ 7; $\alpha(\text{O})=7.52\times 10^{-6}$ 11; $\alpha(\text{P})=4.38\times 10^{-7}$ 7
5904.9?	(51/2 ⁺)	426& I	100	5478.8	(49/2 ⁺)	[M1+E2]	0.0792 13	$\alpha(\text{K})=0.0662$ 11; $\alpha(\text{L})=0.01013$ 16; $\alpha(\text{M})=0.00229$ 4 $\alpha(\text{N})=0.000548$ 9; $\alpha(\text{O})=8.69\times 10^{-5}$ 14; $\alpha(\text{P})=6.08\times 10^{-6}$ 10
6436.8	(53/2 ⁻)	888.9	100	5547.9	(49/2 ⁻)	[E2]	0.00546	$\alpha(\text{K})=0.00447$ 7; $\alpha(\text{L})=0.000767$ 11; $\alpha(\text{M})=0.0001759$ 25 $\alpha(\text{N})=4.19\times 10^{-5}$ 6; $\alpha(\text{O})=6.44\times 10^{-6}$ 9; $\alpha(\text{P})=3.84\times 10^{-7}$ 6

† From $^{170}\text{Er}(^{11}\text{B},4n\gamma)$, unless otherwise stated.‡ From ^{177}W ε decay.# From $^{175}\text{Lu}(\alpha,2n\gamma)$, unless otherwise stated. Values given the Comments are deduced from the cascade-to-crossover in-band branching ratios and the rotational model and by assuming a pure K. They are generally in agreement with those determined from the $\gamma(\theta)$ data.@ 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.

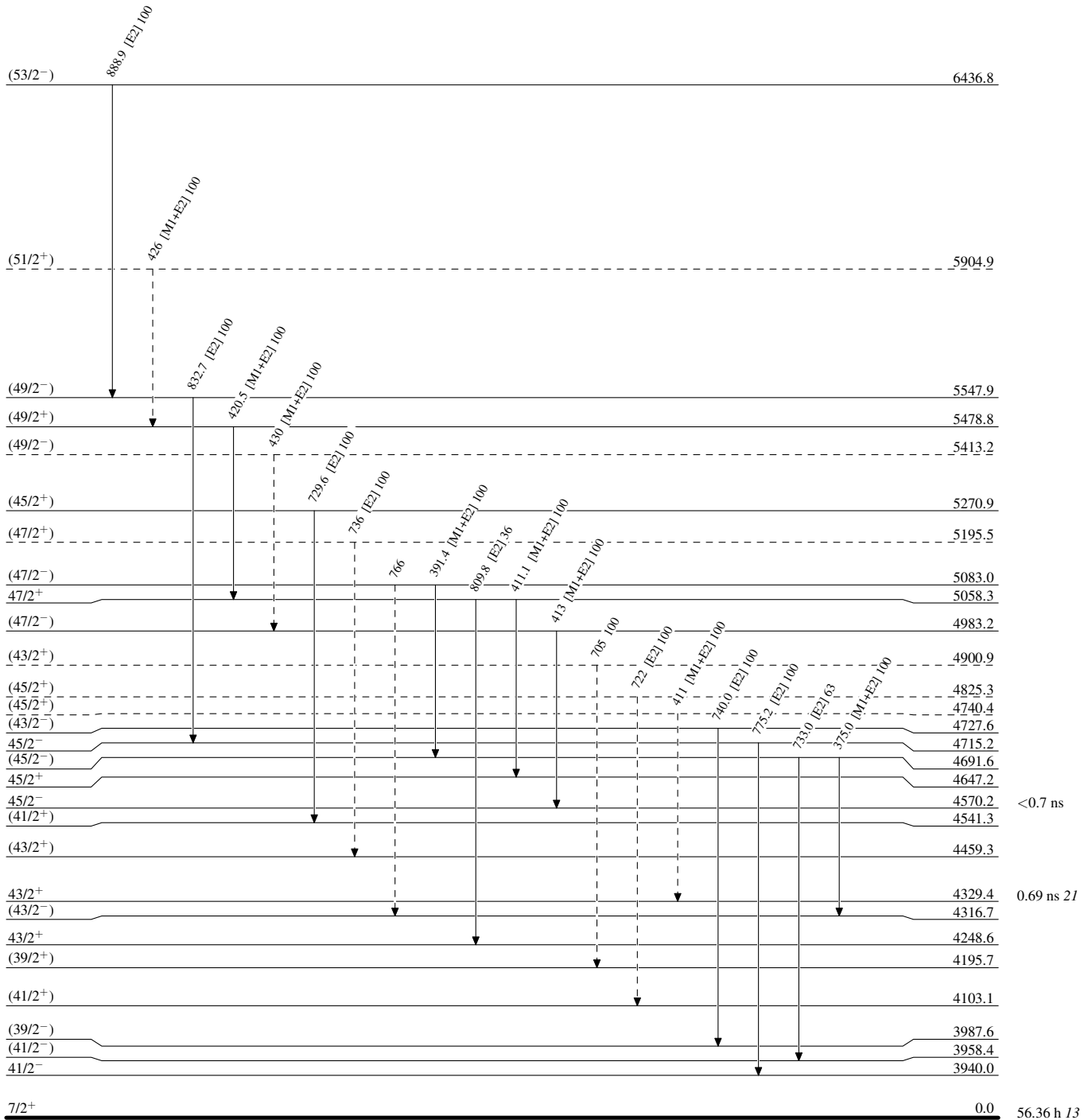
& Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

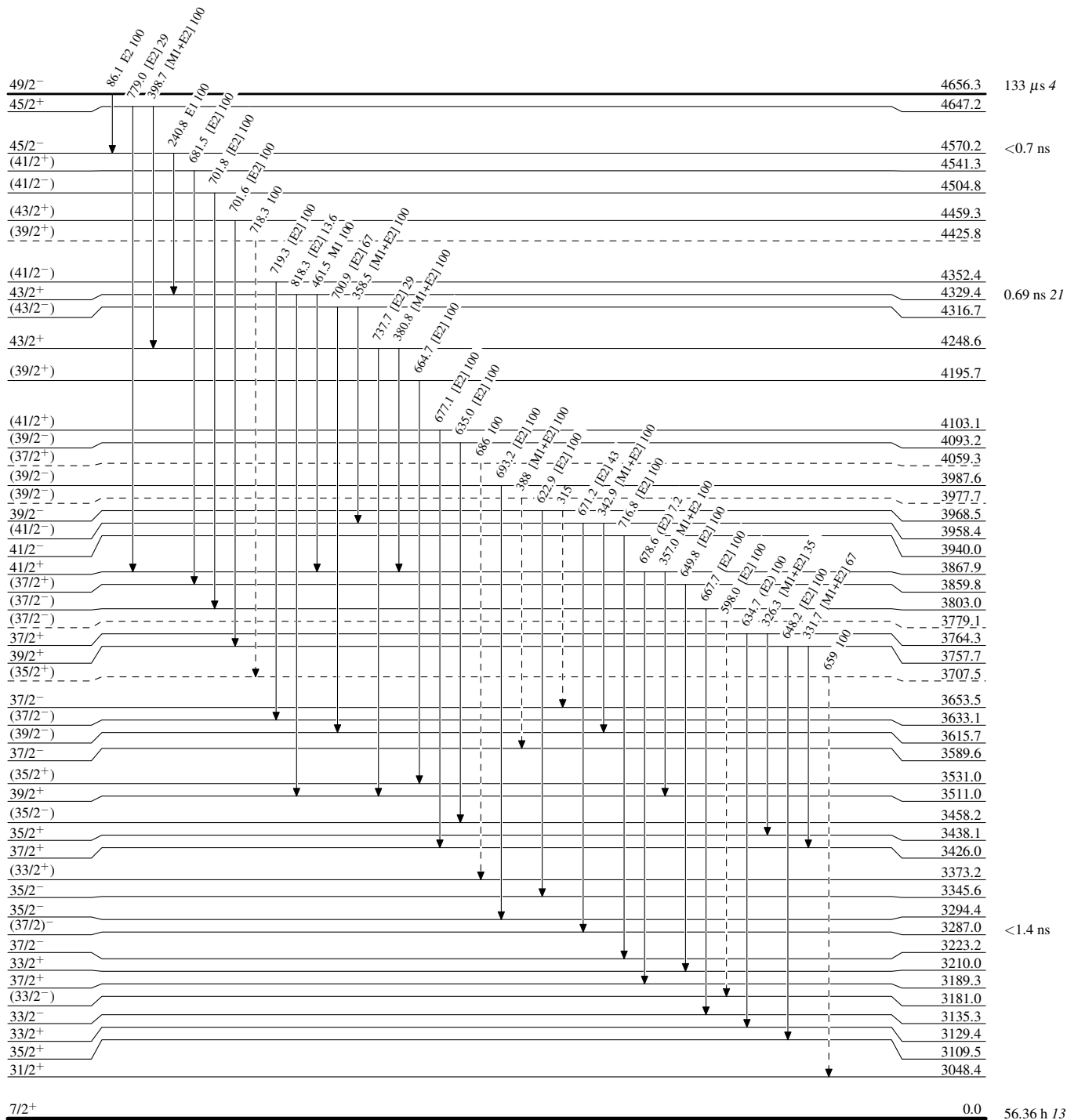
-----► γ Decay (Uncertain)

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain) $7/2^+$

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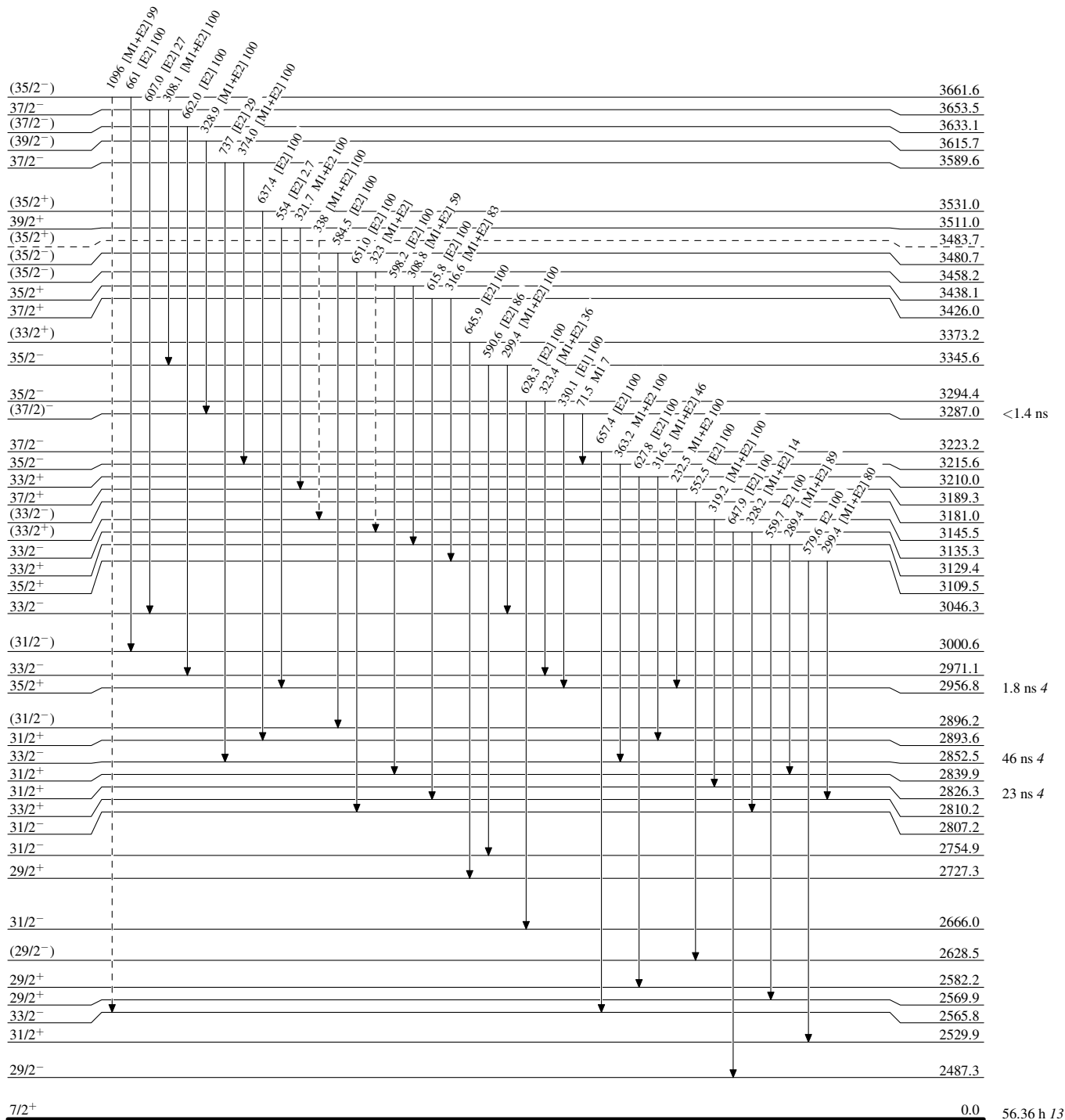
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Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

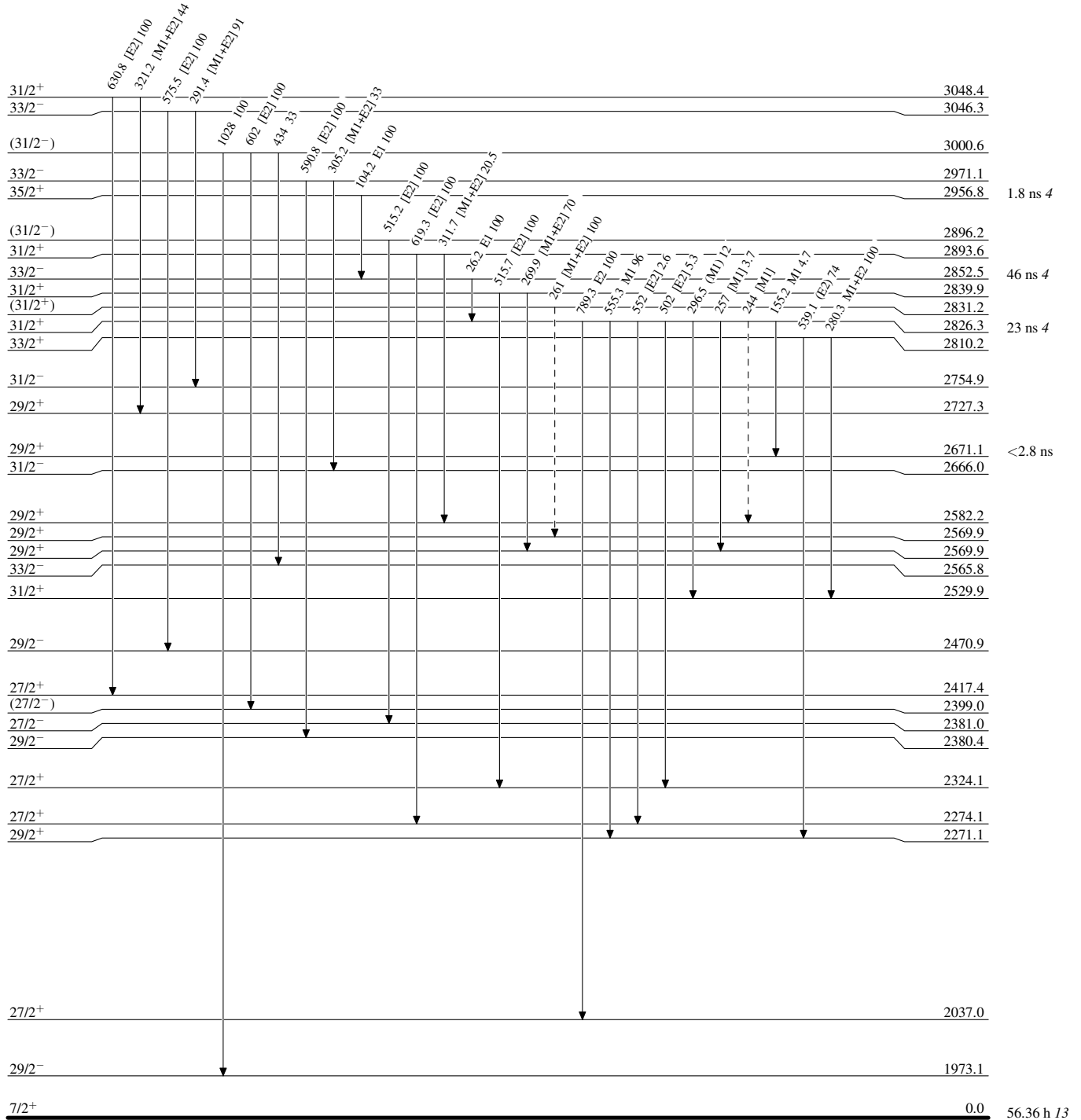
-----► γ Decay (Uncertain)

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)


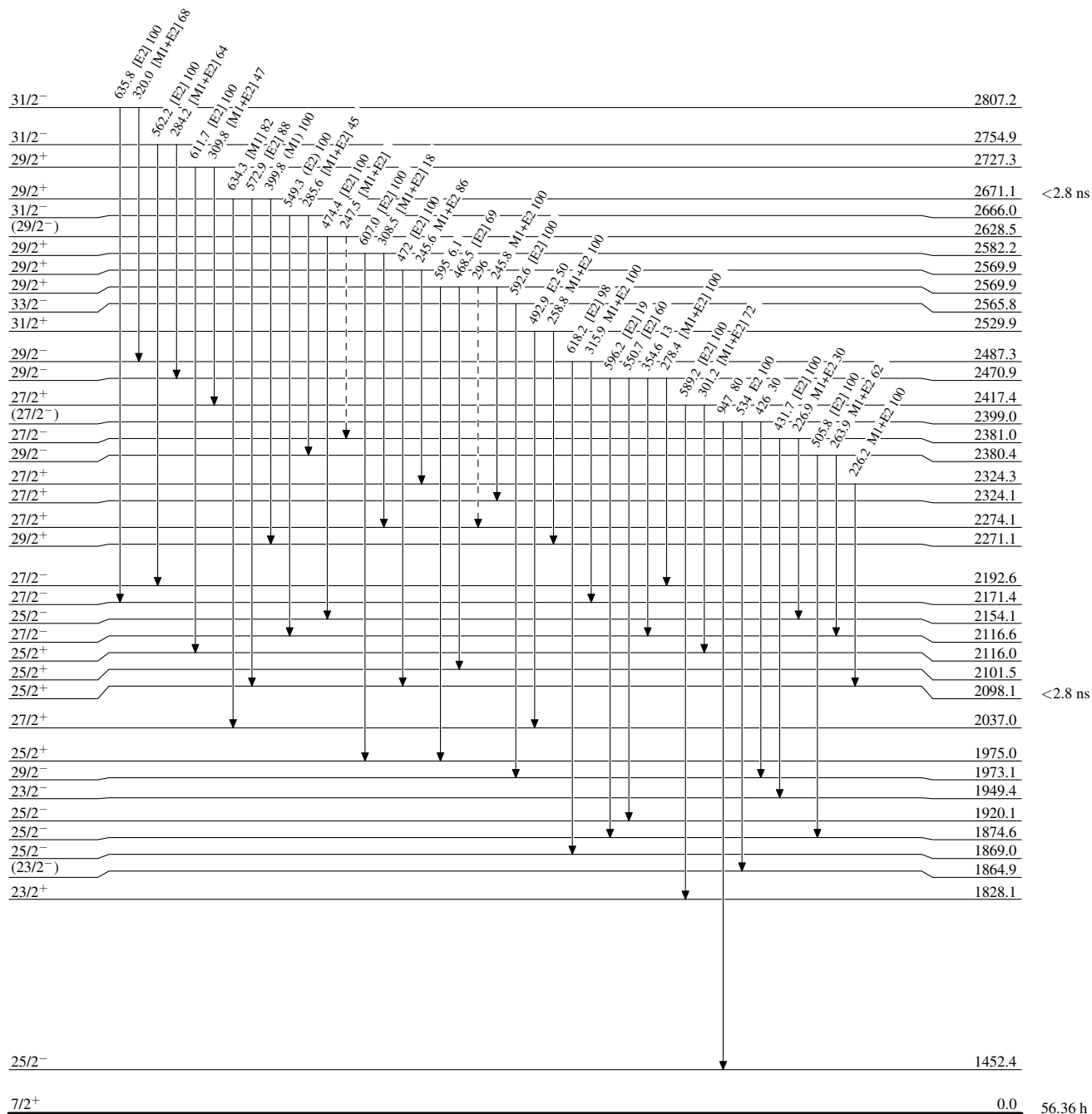
Adopted Levels, Gammas

Legend

Level Scheme (continued)

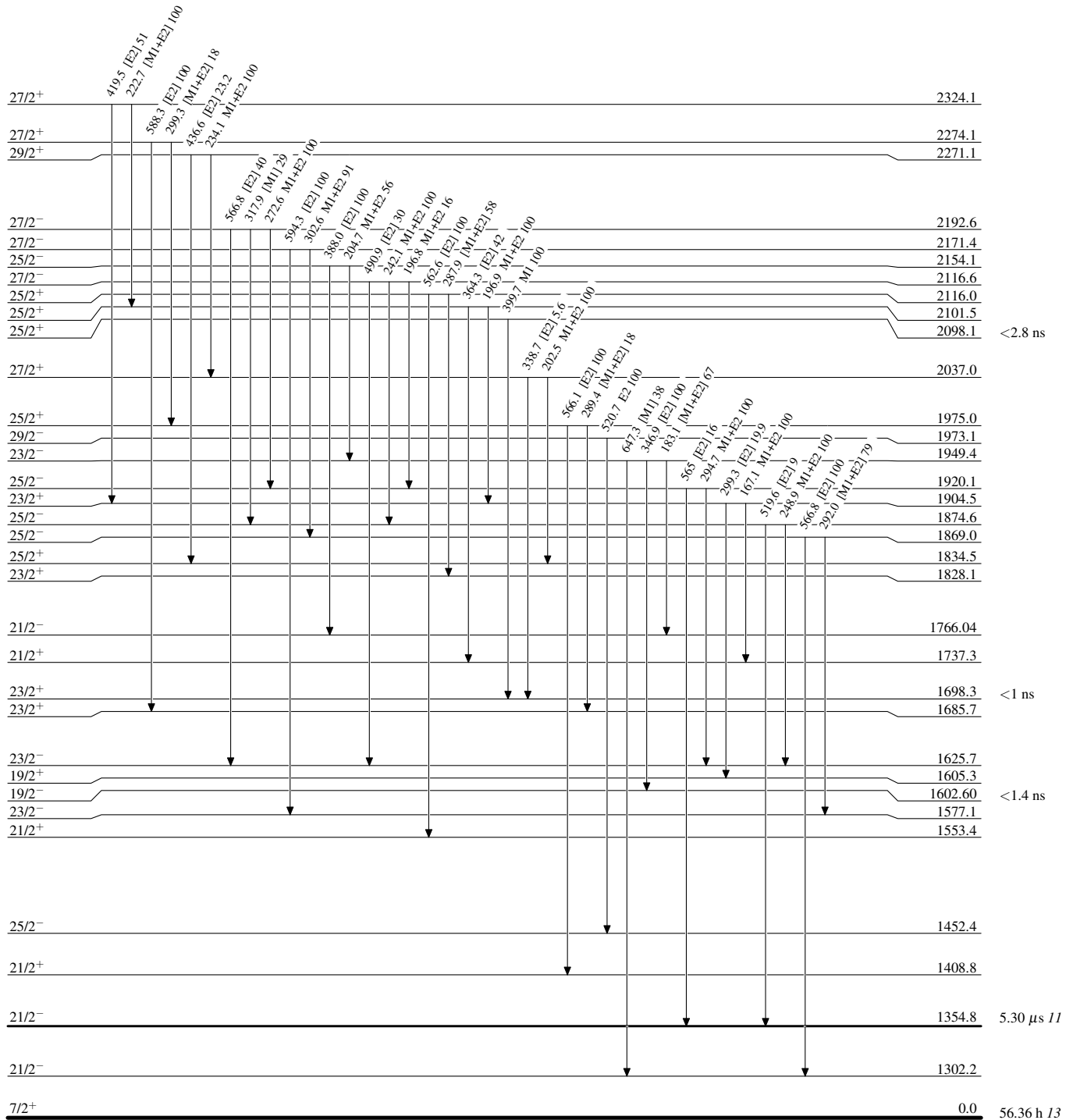
Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)



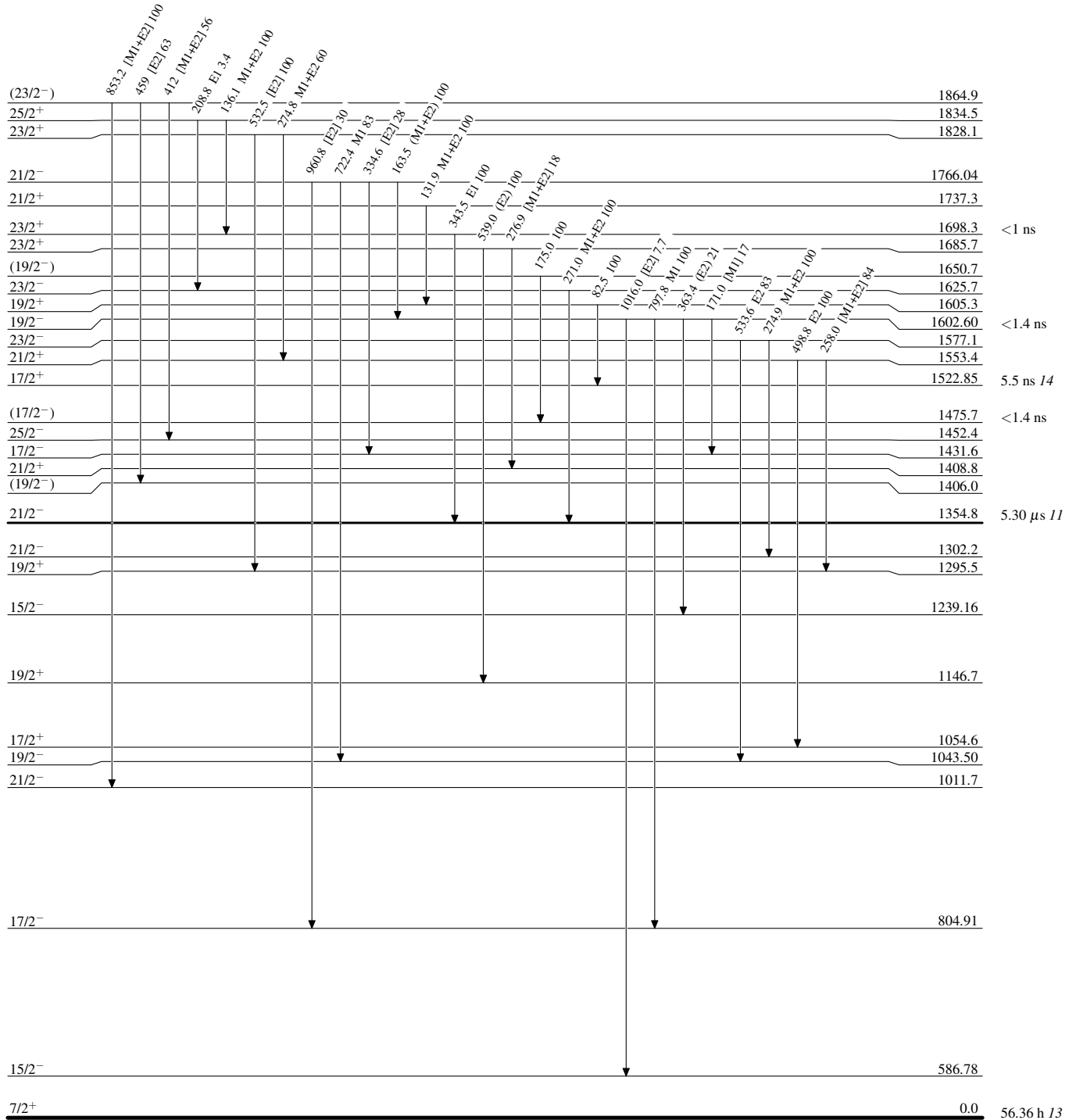
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



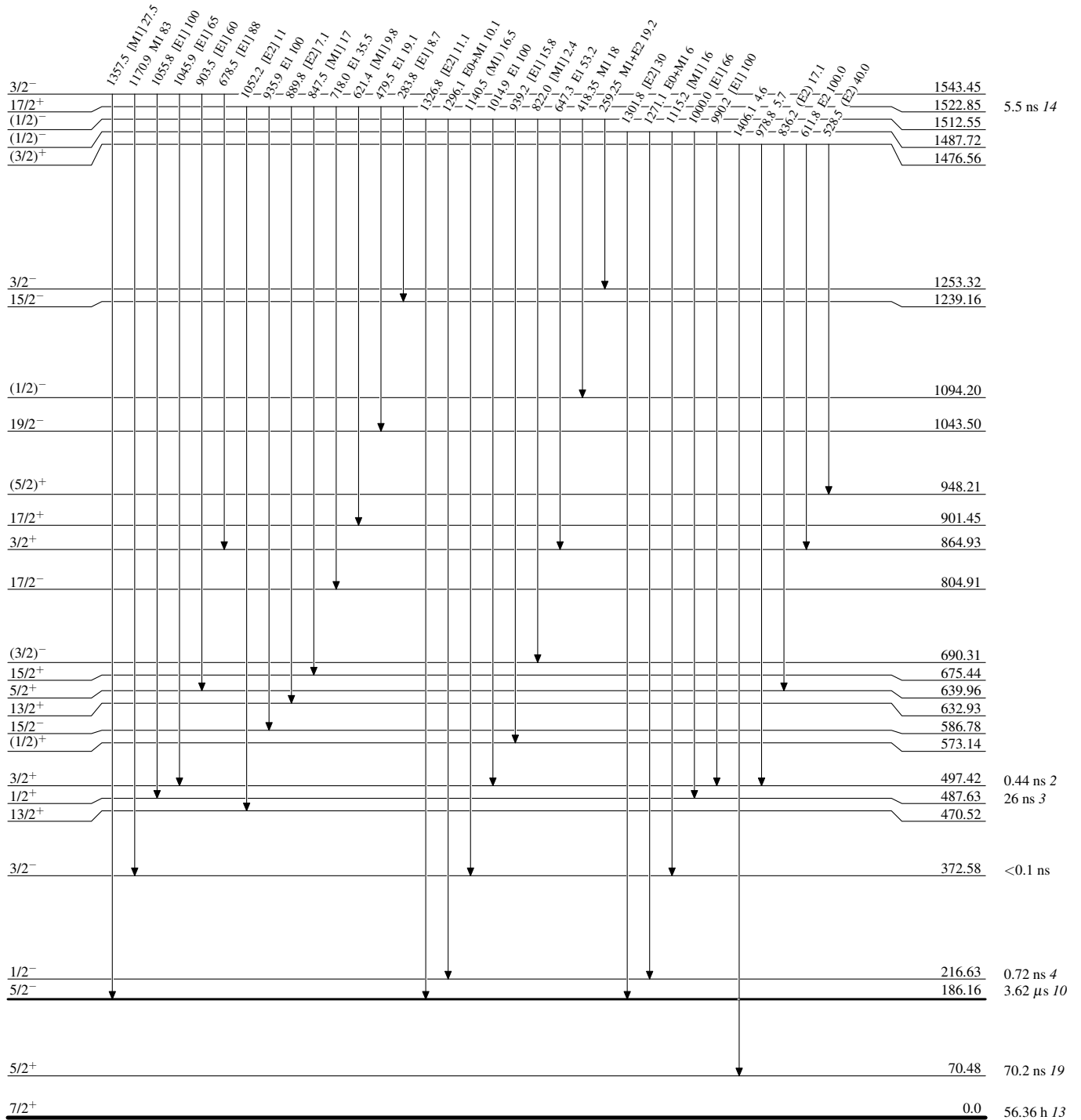
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



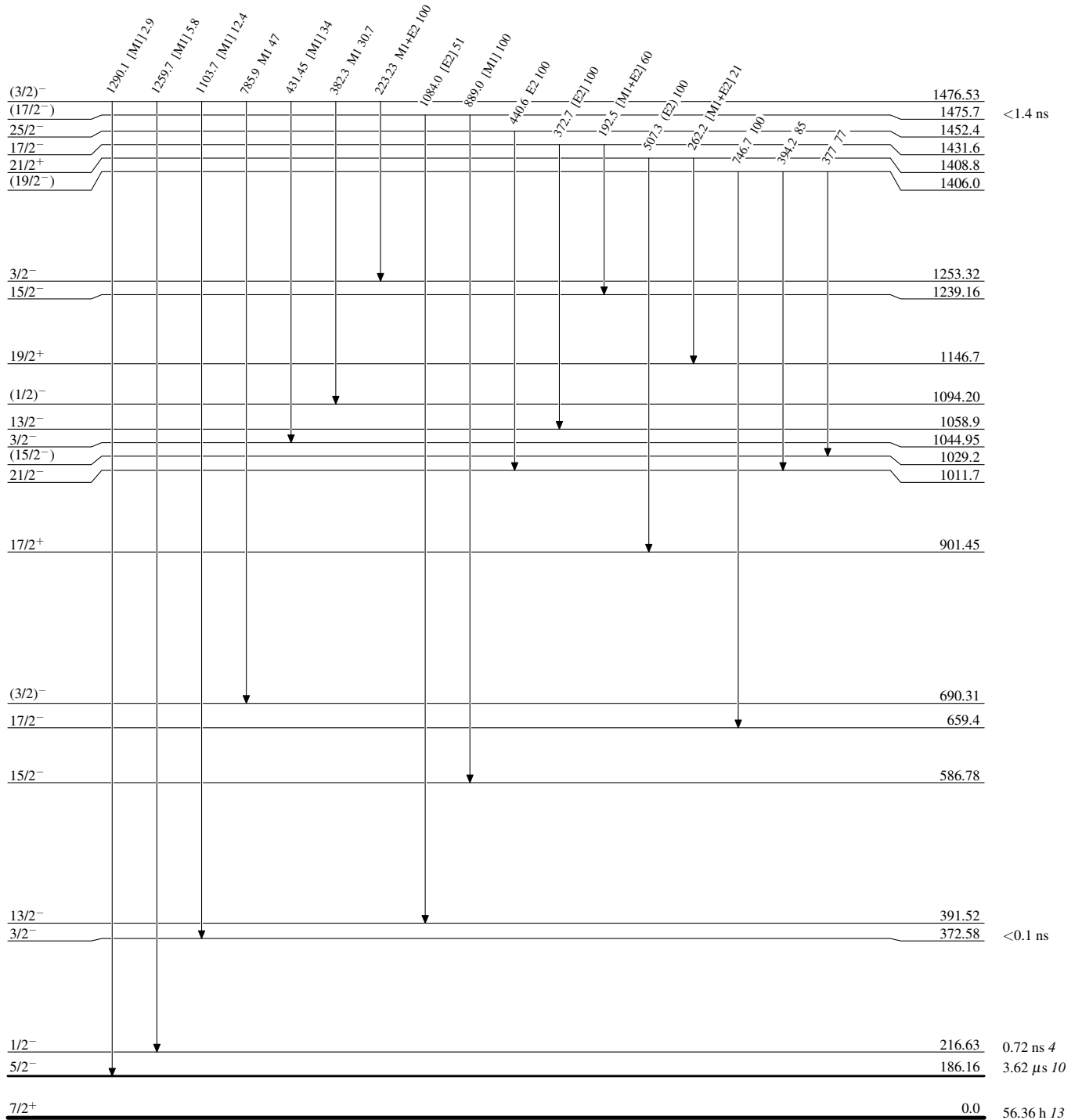
Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Relative photon branching from each level



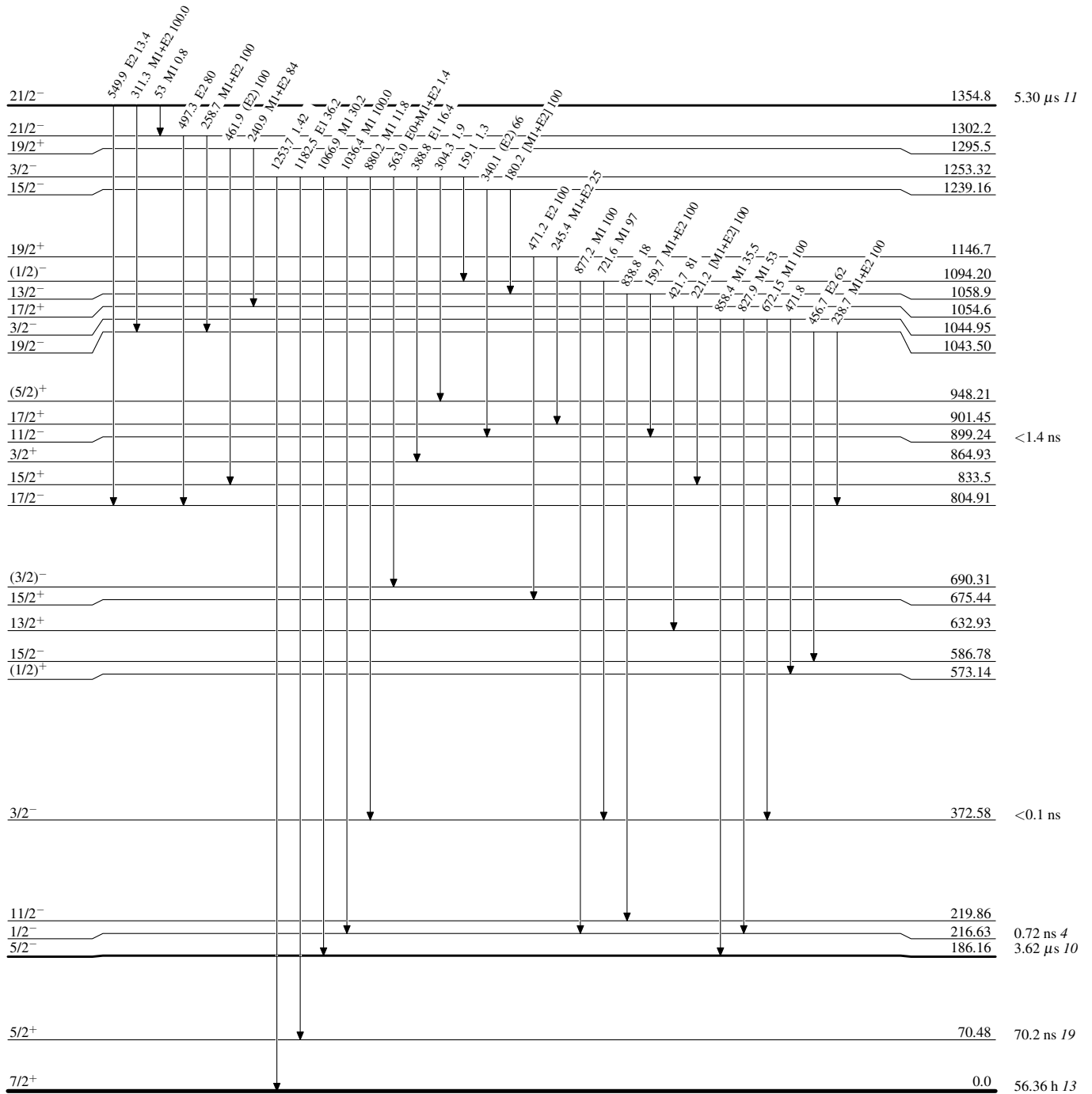
Adopted Levels, GammasLevel Scheme (continued)

Intensities: Relative photon branching from each level



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

Intensities: Relative photon branching from each level

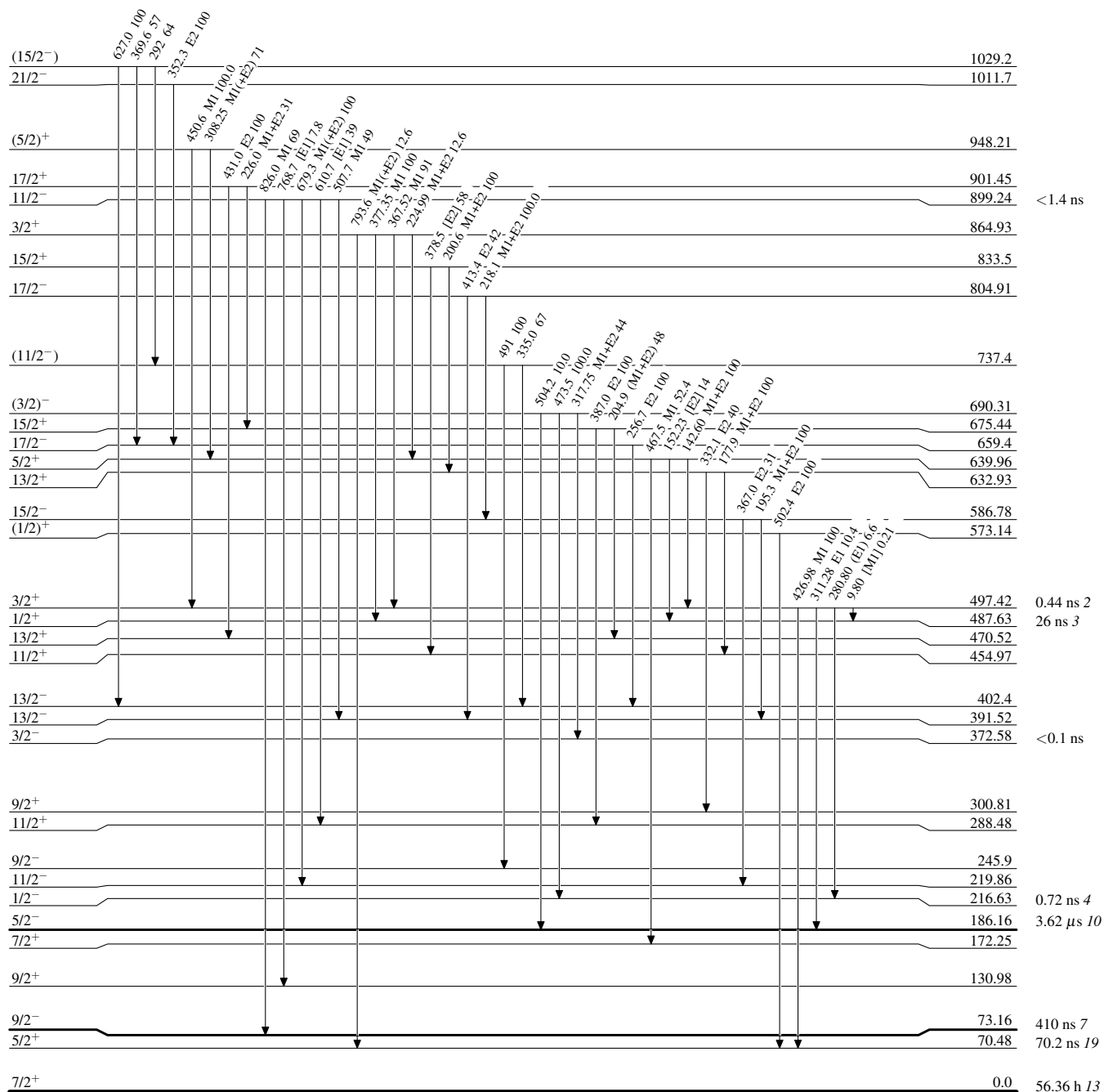


Adopted Levels, Gammas

Legend

Level Scheme (continued)

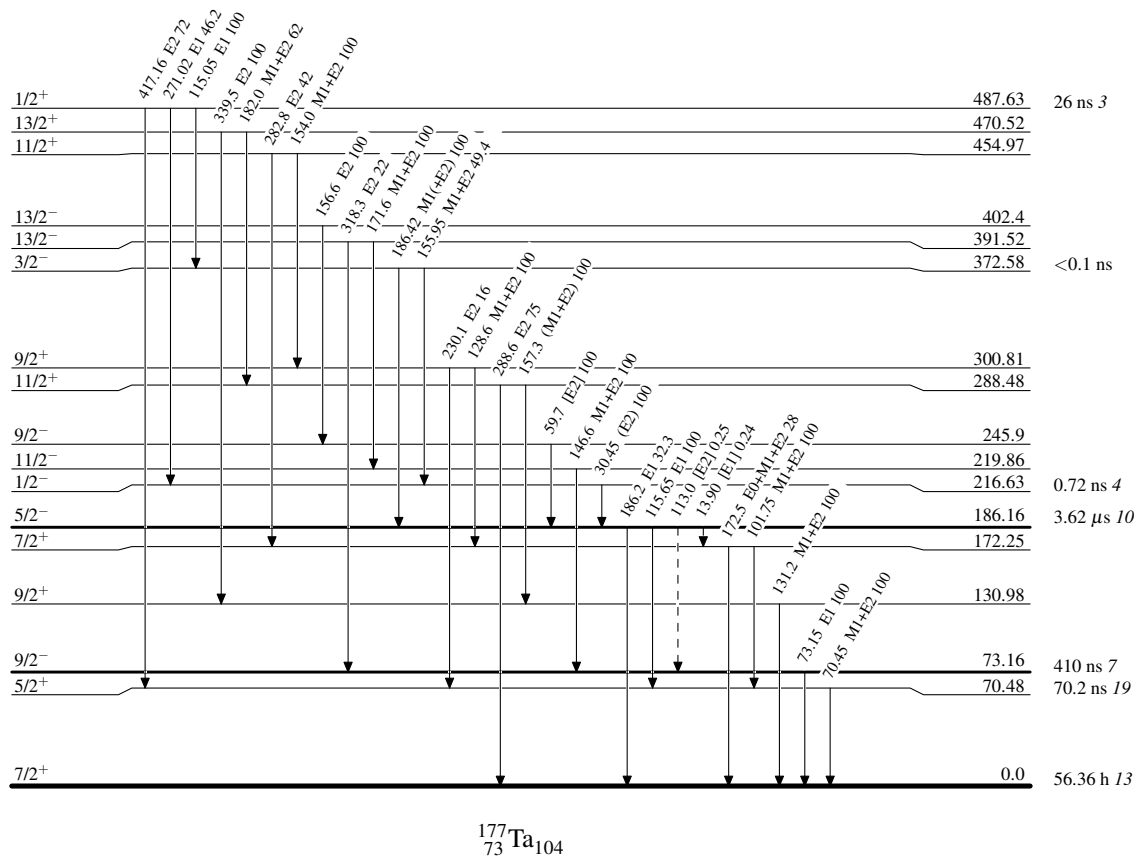
Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)

Legend

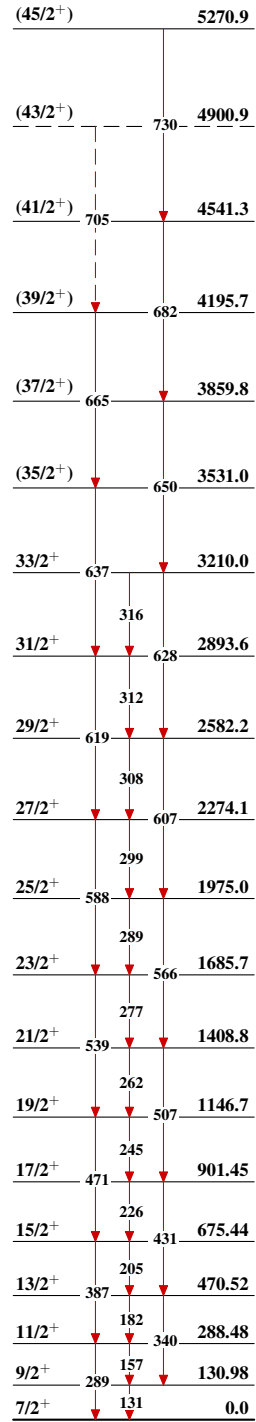
Intensities: Relative photon branching from each level

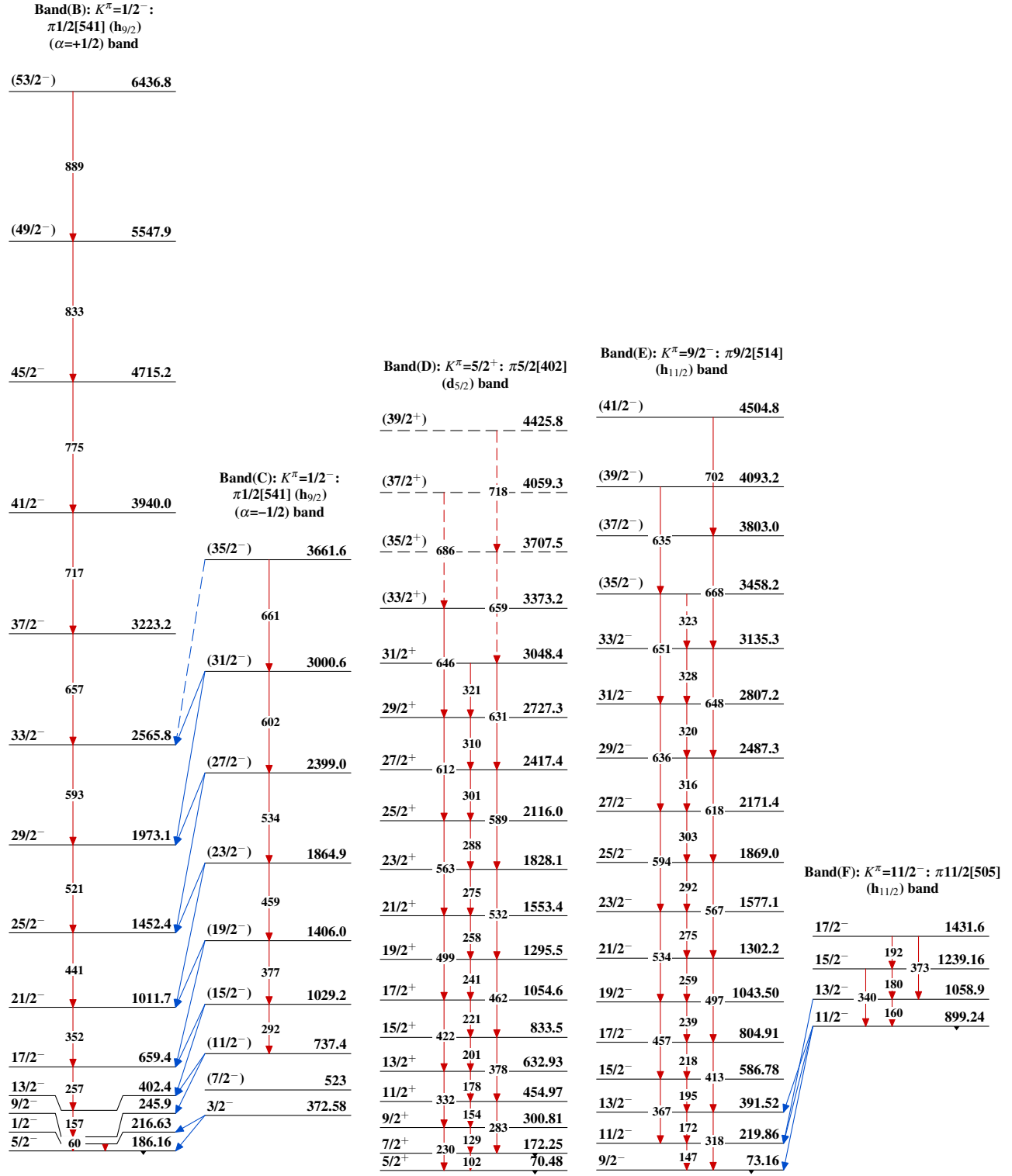
-----► γ Decay (Uncertain)

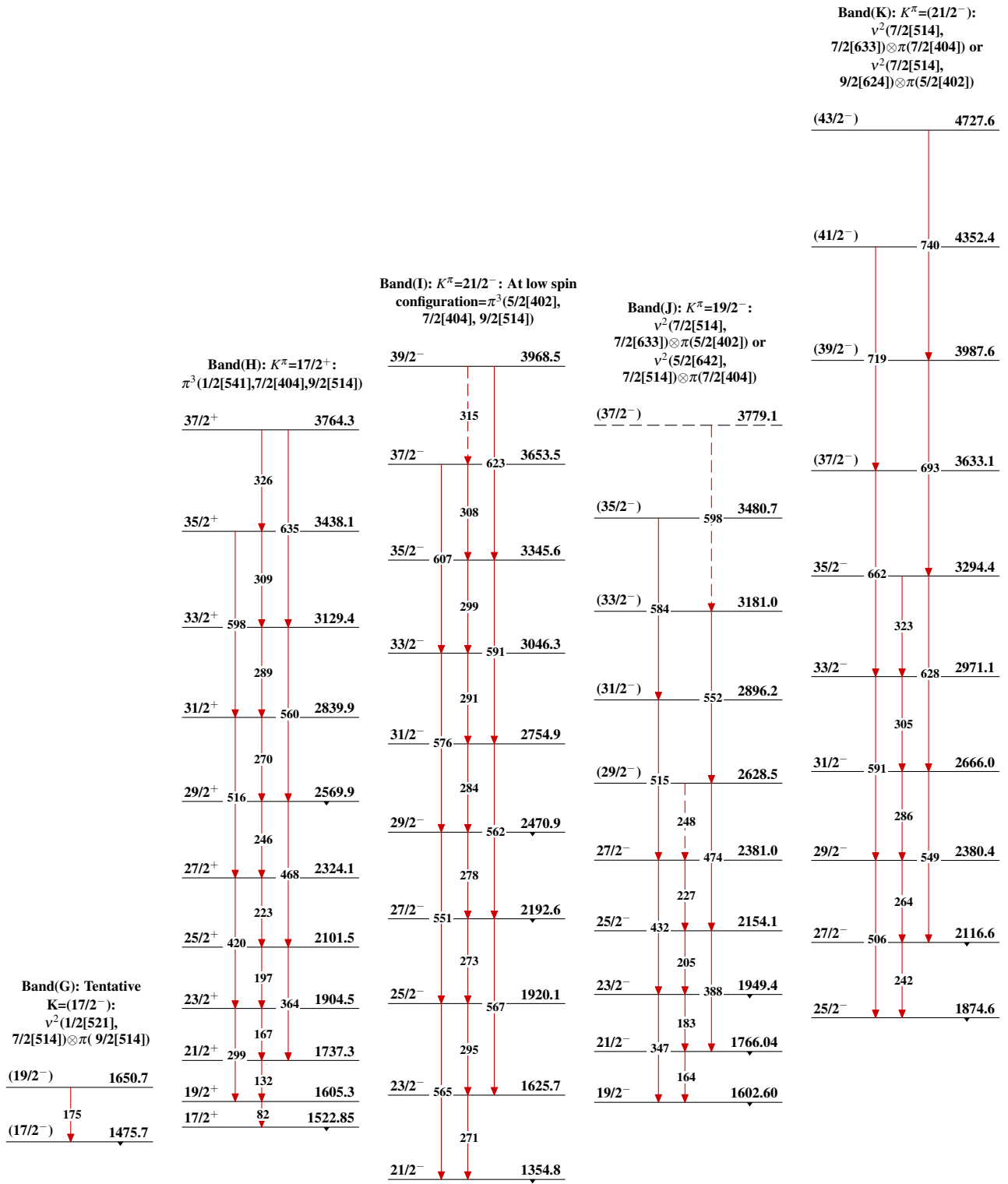


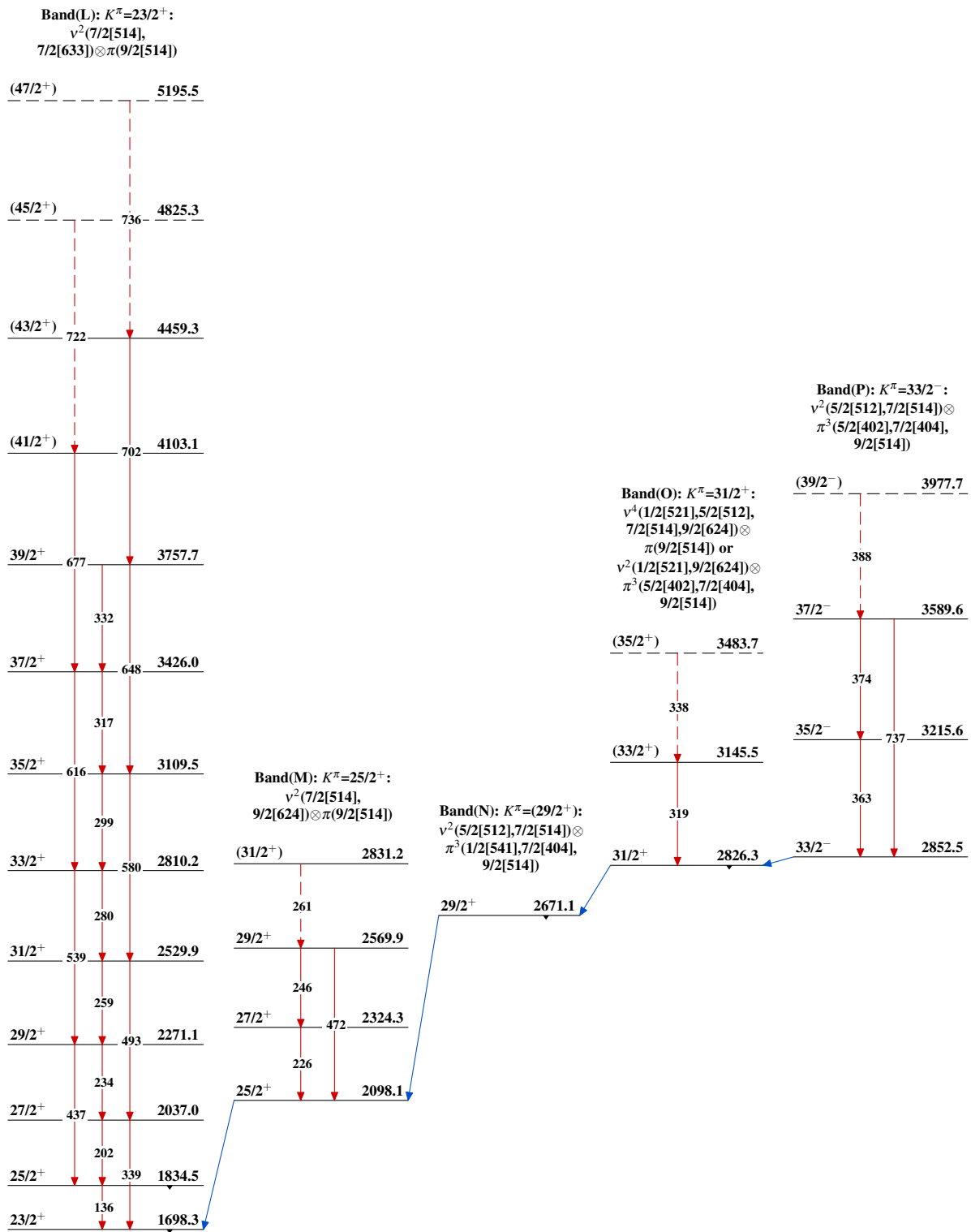
Adopted Levels, Gammas

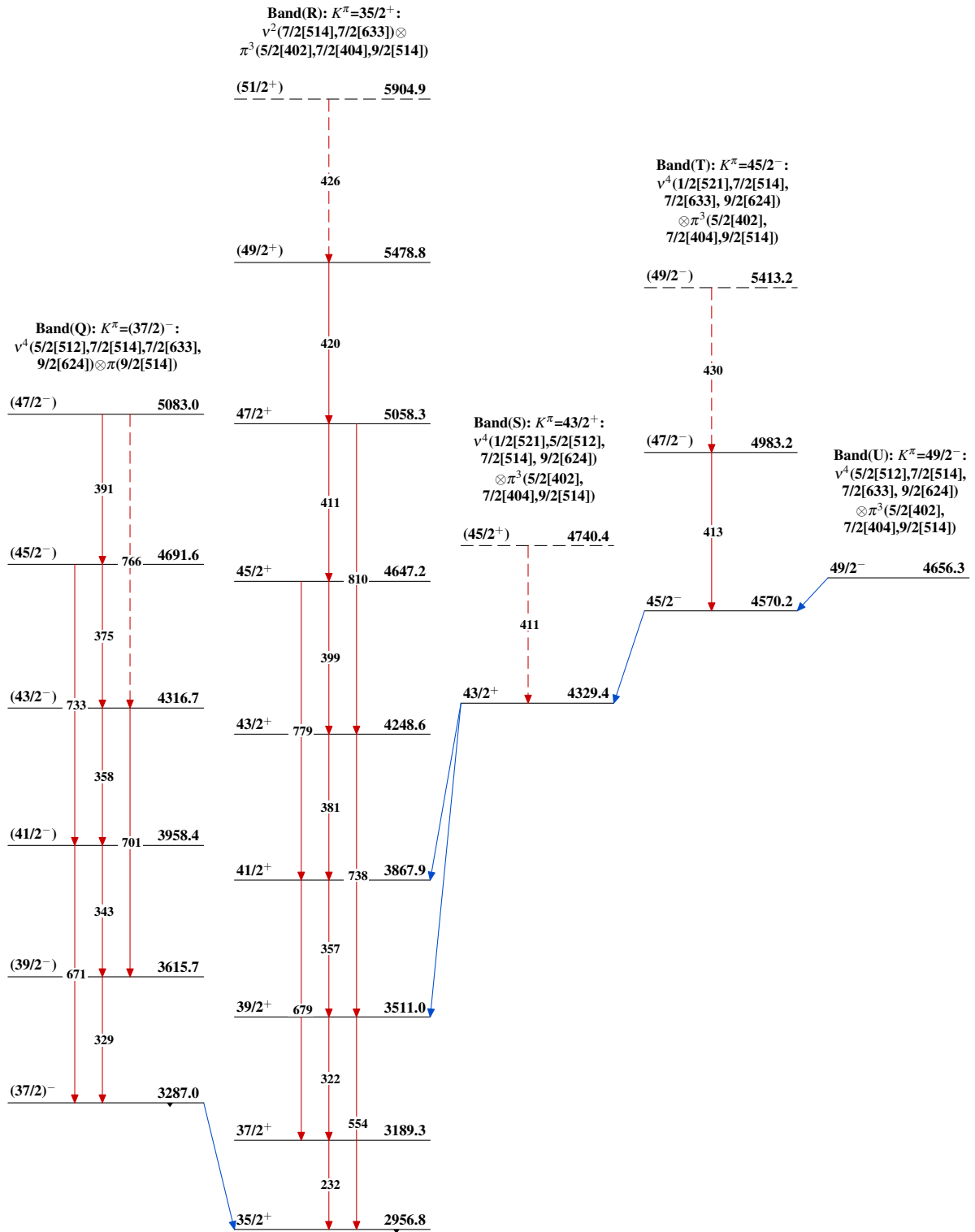
Band(A): $K^\pi=7/2^+ : \pi 7/2[404]$
($g_{7/2}$) band

 $^{177}_{73}\text{Ta}_{104}$

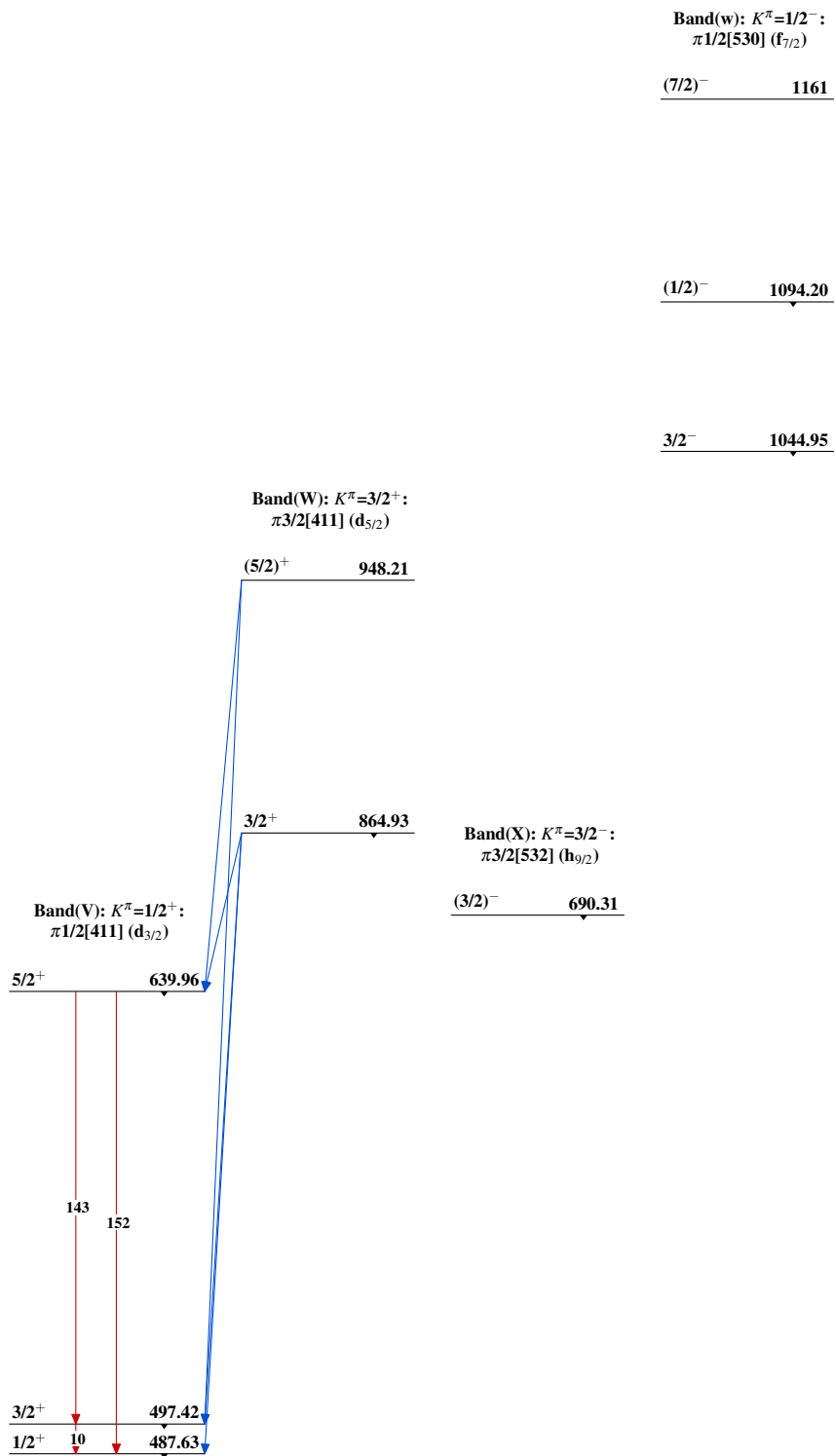
Adopted Levels, Gammas (continued)

Adopted Levels, Gammas (continued)

Adopted Levels, Gammas (continued)

Adopted Levels, Gammas (continued)

Adopted Levels, Gammas (continued)



$^{177}_{73}\text{Ta}_{104}$