Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 187,355 (2023)	20-Sep-2022

Q(β^-)=−6682 *13*; S(n)=9873 *26*; S(p)=1137 *11*; Q(α)=6472.8 *16* 2021Wa16

^{201}At Levels

Cross Reference (XREF) Flags

A	^{205}Fr α decay
B	^{192}Pt(^{14}N,5nγ)
C	^{165}Ho(^{40}Ar,4nγ)

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	XREF	Comments
0.0[&]	9/2$^-$	87.6 s *13*	ABC	%α=71 *7*; %ε+%β^+=29 *7* (1974Ho27) μ=4.01 *7* Q=−1.0 *5* J$^\pi$: Favored α-decay to the ^{197}Bi g.s.(J^π=9/2$^-$,2016Ba42); J=(9/2) in 2018Cu02; μ. T$_{1/2}$: Unweighted average of 90 s *6* (1963Ho18), 90 s *4* (1967Tr06), 87.0 s *6* (1970DaZM), 88 s *5* (1974Ho27) and 83 s *2* (1996Ta18). μ,Q: From the measured hyperfine-structure constants and isotope shifts using the in-source resonance-ionization spectroscopy method (2018Cu02). μ from 4.025 *45* (stat)*57* (syst), deduced using a reference value of μ(^{211}At)=4.139 *37*, with statistical and systematic uncertainties added in quadrature (2018Cu02,2019StZV). Q from −0.96 *15*(stat)*50*(syst) with statistical and systematic uncertainties added in quadrature (2018Cu02,2021StZZ). δ<r^2>(^{201}At,^{205}At)=−0.197 fm^2*7*(stat) *10*(syst) (2018Cu02). Eα=6342 keV *6* (1963Ho18), 6342 keV *3* (1967Tr06), 6340 keV *10* (1970DaZM), 6347 keV *5* (1974Ho27), 6345 keV *2* (1975BaYJ), 6344 keV (1986Wo03), 6344 keV *3* (1996Ta18) and 6343 keV *4* (2005De01). configuration: π $h^{+1}_{9/2}$.
190.10 *10*	7/2$^-$		C	J$^\pi$: 190.1γ M1+E2 to 9/2$^-$. configuration: π $f^{+1}_{7/2}$.
459.20 *14*	1/2$^+$	45 ms *3*	C	%IT=100 J$^\pi$: 269.1γ E3 to 7/2$^-$. T$_{1/2}$: From recoil-ce(Δt) in 2014Au03, where recoils were correlated with the 173γ and 433γ above the isomer, and ce were in coincidence with 190γ and 269γ, below the isomer. configuration: π $s^{-1}_{1/2}$.
631.8[#] *4*	(3/2$^+$)		C	J$^\pi$: 172.6γ (M1+E2) to 1/2$^+$. configuration: π $d^{-1}_{3/2}$.
635.17[&] *16*	(13/2$^-$)		BC	J$^\pi$: 635.1γ (E2) to 9/2$^-$. configuration: dominant π ($h^{+1}_{9/2}$)⊗2$^+$.
690.98 *16*	(11/2$^-$)		C	J$^\pi$: 691.1γ to 9/2$^-$. configuration: dominant π ($h^{+1}_{9/2}$)⊗2$^+$.
749.36 *14*	(13/2$^+$)	15.9 ns *14*	BC	J$^\pi$: 114.1γ to 13/2$^-$, 749.3γ (M2) to 9/2$^-$; systematics and shell-model predictions. T$_{1/2}$: From 749.0γ(t) in ^{192}Pt(^{14}N,5nγ) (1983Dy02). Other ≈ 20 ns in ^{165}Ho(^{40}Ar,4nγ) (2015Au01). configuration: π $i^{+1}_{13/2}$.
804.2[@] *6*	(5/2$^+$)		C	J$^\pi$: 172.5γ to (3/2$^+$). configuration: Probable π $d^{-1}_{5/2}$.

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Adopted Levels, Gammas (continued)

^{201}At Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$	XREF	Comments
1065.2[#] *6*	(7/2$^+$)		C	J^{π}: 433.3γ (E2) to (3/2$^+$).
1228.96[&] *22*	(17/2$^-$)		BC	J^{π}: 583.8γ (E2) to (13/2$^-$). configuration: $\pi\ (h^{+1}_{9/2})\otimes 4^+$.
1261.29 *20*	(15/2$^+$)		C	J^{π}: 511.8γ D to (13/2$^+$); 364.1γ (M1) from (17/2$^+$).
1288.6[@] *6*	(9/2$^+$)		C	J^{π}: 223.3γ (M1) to (7/2$^+$), 484.5γ (E2) to (5/2$^+$).
1494.85 *19*	(17/2$^+$)		BC	J^{π}: 233.4γ (M1) to (15/2$^+$), 745.5γ (E2) to (13/2$^+$). configuration: Dominant $\pi\ (i^{+1}_{13/2})\otimes 2^+$.
1613.3[#] *7*	(11/2$^+$)		C	J^{π}: 548.1γ (E2) to (7/2$^+$).
1625.34 *19*	(17/2$^+$)		C	J^{π}: 130.3γ (M1) to (17/2$^+$), 876.1γ (E2) to (13/2$^+$). configuration: Dominant $\pi\ (h^{+1}_{9/2})\ \nu\ (f^{-1}_{5/2},i^{-1}_{13/2})_{5-}$.
1705.03[&] *24*	(21/2$^-$)		BC	J^{π}: 476.2γ (E2) to (17/2$^-$). configuration: a mixture between $\pi\ (h^{+1}_{9/2})\otimes 6^+$ and $\pi\ [f^{+1}_{7/2},(h^{+2}_{9/2})_{8+}]$.
1790.3 *4*			B	
1856.0[@] *7*	(13/2$^+$)		C	J^{π}: 242.8γ to (11/2$^+$), 567.3γ (E2) to (9/2$^+$).
1921.30 *21*	(21/2$^+$)		BC	J^{π}: 216.3γ to (21/2$^-$), 295.9γ (E2) to (17/2$^+$). configuration: Dominant $\pi\ (h^{+1}_{9/2})\ \nu\ (f^{-1}_{5/2},i^{-1}_{13/2})_{7-}$.
1980.6 *3*	(23/2$^-$)		C	J^{π}: 275.5γ (M1) to (21/2$^-$). configuration: Dominant $\pi\ [f^{+1}_{7/2},(h^{+2}_{9/2})_{8+}]$.
2004.3 *3*	(23/2$^+$)		C	J^{π}: 83.0γ to (21/2$^+$), 299.3γ to (21/2$^-$). configuration: Dominant $\pi\ (h^{+1}_{9/2})\ \nu\ (f^{-1}_{5/2},i^{-1}_{13/2})_{8-}$.
2050.8 *3*	(25/2$^+$)	<20 ns	C	J^{π}: 46.5γ to (23/2$^+$). $T_{1/2}$: An estimate from γ(t) in 2015Au01. configuration: Dominant $\pi\ (h^{+1}_{9/2})\ \nu\ (f^{-1}_{5/2},i^{-1}_{13/2})_{9-}$.
2076.9 *5*	(23/2$^-$)		B	J^{π}: 371.9γ D to (21/2$^-$); proposed configuration. configuration: Probable $\pi\ [f^{+1}_{7/2},(h^{+2}_{9/2})_{8+}]$.
2147.2[&] *4*	(21/2$^-$)		C	J^{π}: 917.8γ (E2) to (17/2$^-$). configuration: a mixture between $\pi\ (h^{+1}_{9/2})\otimes 6^+$ and $\pi\ (f^{+1}_{7/2},(h^{+2}_{9/2})_{8+})$.
2232.1[#] *9*	(15/2$^+$)		C	J^{π}: 618.8γ (E2) to (11/2$^+$).
2319.8 *3*	(29/2$^+$)	3.39 μs *9*	C	%IT=100 J^{π}: 269.0γ E2 to (25/2$^+$), 339.2γ E3 to (23/2$^-$). $T_{1/2}$: From recoil-269γ(t) using the planar detector data and the logarithmic time scale method (2015Au01). A prompt coincidence with a 296γ, 427γ, 594γ, 635γ, 746γ or 749γ in any of the focal plane clover detectors was also required. configuration: $\pi\ [i^{+1}_{13/2},(h^{+2}_{9/2})_{8+}]$.
2518.9[&] *5*	(25/2$^-$)		C	J^{π}: 371.7γ (E2) to (21/2$^-$). configuration: Dominant $\pi\ (h^{+1}_{9/2})\otimes 8^+$.
2637.6 *5*	(25/2$^+$)		C	J^{π}: 716.3γ (E2) to 21/2$^+$.
2990.2[a] *5*	(23/2$^-$)		C	J^{π}: 1068.9γ D to (21/2$^+$); proposed configuration. E(level): The total transition intensity of 145γ that feeds this level is much higher than the 1069γ one that depopulates it, thus suggesting the existence of at least one additional, unobserved decay branch. configuration: $\pi\ (i^{+1}_{13/2})\otimes\nu\ (f^{-1}_{5/2},i^{-1}_{13/2})_{5-}$.
3135.2[a] *6*	(25/2$^-$)		C	J^{π}: 145.0γ (M1) to (23/2$^-$); band assignment.
3219.2 *6*			C	
3240.9 *5*	(33/2$^+$)		C	J^{π}: 921.1γ (E2) to (29/2$^+$). configuration: Possible $\pi\ [i^{+1}_{13/2},(h^{+2}_{9/2})_{8+}]\otimes 2^+$.
3245.4 *6*	(29/2$^+$)		C	J^{π}: 607.8γ (E2) to (25/2$^+$).
3369.6 *5*			C	
3379.6[a] *7*	(27/2$^-$)		C	J^{π}: 244.4γ (M1) to (25/2$^-$); band assignment.
3504.4 *4*			C	
3621.8 *7*			C	

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Adopted Levels, Gammas (continued)

^{201}At Levels (continued)

E(level)[†]	J^{π}[‡]	XREF	Comments
3666.5[a] *8*	(29/2⁻)	C	J^{π}: 286.9γ (M1) to (27/2⁻); band assignment.
3693.9 *7*		C	
3699.7 *6*		C	
3779.1 *6*		C	
3785.9 *8*		C	
3853.3 *7*		C	
3952.8 *6*		C	
3983.8[a] *9*	(31/2⁻)	C	J^{π}: 317.3γ (M1) to (29/2⁻); band assignment.
4111.4 *6*		C	
4159.0 *7*		C	
4256.1[a] *10*	(33/2⁻)	C	J^{π}: 272.3γ (M1) to (31/2⁻); band assignment.
4454.0[a] *11*	(35/2⁻)	C	J^{π}: 197.9γ (M1) to (33/2⁻); band assignment.
4789.0[a] *12*	(37/2⁻)	C	J^{π}: 335.0γ (M1) to (35/2⁻); band assignment.

[†] From a least-squares fit to Eγ.

[‡] From deduced transition multipolarities and the observed decay pattern in ^{165}Ho(^{40}Ar,4nγ) and ^{192}Pt(^{14}N,5nγ), systematics in the region and shell-model predictions, unless otherwise stated.

[#] Seq.(B): Based on $\pi\ (d^{-1}_{3/2})\otimes^{202}$Rn core states ($J^{\pi}=2^+,4^+,6^+$).

[@] Seq.(C): Based on $\pi\ (d^{-1}_{5/2})\otimes^{202}$Rn core states ($J^{\pi}=2^+,4^+$).

[&] Seq.(D): Based on $\pi\ (h^{+1}_{9/2})\otimes^{202}$Rn core states ($J^{\pi}=2^+,4^+,6^+,8^+$).

[a] Band(A): Magnetic-dipole, shears band. Configuration=$\pi\ (i^{+1}_{13/2})\otimes\nu\ (f^{-1}_{5/2},i^{-1}_{13/2})_{9-}$ for the lower cascade and Configuration= $\pi\ (h^{+2}_{9/2},i^{+1}_{13/2})\otimes\nu\ (f^{-1}_{5/2},i^{-1}_{13/2})_{5-}$ above the band crossing.

$\gamma(^{201}At)$

E_i(level)	J_i^π	E_γ†	I_γ†	E_f	J_f^π	Mult.‡	δ	α@	Comments
190.10	7/2⁻	190.1 *1*	100	0.0	9/2⁻	M1+E2	0.65 *8*	1.55 *7*	α(K)=1.17 *7*; α(L)=0.289 *4*; α(M)=0.0710 *12* α(N)=0.01838 *32*; α(O)=0.00383 *6*; α(P)=0.000488 *8* Mult.,δ: From K/(L+M+...)exp=3.1 *2* (2014Au03). δ was determined by the evaluator using the briccmixing program.
459.20	1/2⁺	269.1 *1*	100	190.10	7/2⁻	E3		1.231 *17*	α(K)=0.2270 *32*; α(L)=0.737 *10*; α(M)=0.2028 *29* α(N)=0.0528 *7*; α(O)=0.01050 *15*; α(P)=0.001115 *16* B(E3)(W.u.)=0.0493 *+35−31* Mult.: From K/(L+M+...)exp=0.24 *1* (2014Au03).
631.8	(3/2⁺)	172.6 *4*	100	459.20	1/2⁺	(M1+E2)		1.7 *9*	α(K)=1.2 *9*; α(L)=0.42 *5*; α(M)=0.106 *18* α(N)=0.027 *5*; α(O)=0.0056 *7*; α(P)=0.000663 *14* Mult.: R=0.83 *5* (2014Au03). The x-ray intensity in a spectrum produced by gating on 533γ is consistent with Mult=M1+E2, but not with a pure Mult=E2.
635.17	(13/2⁻)	635.1 *2*	100	0.0	9/2⁻	(E2)		0.01951 *27*	α(K)=0.01424 *20*; α(L)=0.00397 *6*; α(M)=0.000985 *14* α(N)=0.000255 *4*; α(O)=5.27×10⁻⁵ *7*; α(P)=6.54×10⁻⁶ *9* Mult.: A_2=0.11 *3* in 1983Dy02. Other: A_2=+0.09 *4* (2015Au01).
690.98	(11/2⁻)	691.1 *2*	100	0.0	9/2⁻				
749.36	(13/2⁺)	58.5 *2*	4.5# *15*	690.98	(11/2⁻)	[E1]		0.424 *7*	B(E1)(W.u.)=2.1×10⁻⁶ *+8−7* α(L)=0.322 *5*; α(M)=0.0775 *13* α(N)=0.01963 *33*; α(O)=0.00389 *7*; α(P)=0.000436 *7*
		114.1 *2*	9.6# *9*	635.17	(13/2⁻)	[E1]		0.332 *5*	B(E1)(W.u.)=6.1×10⁻⁷ *+11−9* α(K)=0.262 *4*; α(L)=0.0538 *8*; α(M)=0.01283 *19* α(N)=0.00327 *5*; α(O)=0.000668 *10*; α(P)=8.08×10⁻⁵ *12*
		749.3 *2*	100# *12*	0.0	9/2⁻	(M2)		0.1204 *17*	α(K)=0.0949 *13*; α(L)=0.01935 *27*; α(M)=0.00467 *7* α(N)=0.001215 *17*; α(O)=0.000260 *4*; α(P)=3.55×10⁻⁵ *5* B(M2)(W.u.)=0.183 *+18−16* Mult.: A_2=0.05 *3* in 1983Dy02. E3 admixtures are possible.
804.2	(5/2⁺)	172.5 *4*	100	631.8	(3/2⁺)				
1065.2	(7/2⁺)	433.3 *4*	100	631.8	(3/2⁺)	(E2)		0.0478 *7*	α(K)=0.0307 *4*; α(L)=0.01275 *18*; α(M)=0.00326 *5* α(N)=0.000842 *12*; α(O)=0.0001713 *25*; α(P)=2.003×10⁻⁵ *29* Mult.: R=1.21 *5* (2014Au03).
1228.96	(17/2⁻)	593.8 *2*	100	635.17	(13/2⁻)	(E2)		0.02262 *32*	α(K)=0.01624 *23*; α(L)=0.00480 *7*; α(M)=0.001198 *17* α(N)=0.000310 *4*; α(O)=6.39×10⁻⁵ *9*; α(P)=7.85×10⁻⁶ *11* Mult.: A_2=0.16 *5* in 1983Dy02. Other: A_2=+0.08 *2* (2015Au01).
1261.29	(15/2⁺)	511.8 *2*	100	749.36	(13/2⁺)	D			Mult.: A_2=−0.14 *3* (2015Au01).
1288.6	(9/2⁺)	223.3 *4*	41.5 *24*	1065.2	(7/2⁺)	(M1)		1.245 *19*	α(K)=1.009 *15*; α(L)=0.1795 *27*; α(M)=0.0425 *6* α(N)=0.01100 *16*; α(O)=0.002355 *35*; α(P)=0.000325 *5* Mult.: A_2=−0.29 *7* and R=0.74 *12* (2014Au03).
		484.5 *4*	100 *7*	804.2	(5/2⁺)	(E2)		0.0362 *5*	α(K)=0.02440 *34*; α(L)=0.00888 *13*; α(M)=0.002248 *32* α(N)=0.000581 *8*; α(O)=0.0001189 *17*; α(P)=1.415×10⁻⁵ *20* Mult.: A_2=+0.70 *6* and R=1.4 *2* (2014Au03).

$^{201}_{85}At_{116}$-4

γ(^{201}At) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[@]	Comments
1494.85	(17/2+)	233.4 *2*	19.6 *5*	1261.29	(15/2+)	(M1)	1.101 *16*	α(K)=0.892 *13*; α(L)=0.1586 *23*; α(M)=0.0375 *5* α(N)=0.00972 *14*; α(O)=0.002081 *30*; α(P)=0.000287 *4* Mult.: A_2=−0.05 *2* (2015Au01).
		745.5 *2*	100 *3*	749.36	(13/2+)	(E2)	0.01389 *19*	α(K)=0.01048 *15*; α(L)=0.00258 *4*; α(M)=0.000633 *9* α(N)=0.0001637 *23*; α(O)=3.41×10^{-5} *5*; α(P)=4.32×10^{-6} *6* Mult.: A_2=0.24 *9* in 1983Dy02. Other: A_2=+0.4 *2* (2015Au01).
1613.3	(11/2+)	548.1 *4*	100	1065.2	(7/2+)	(E2)	0.0271 *4*	α(K)=0.01902 *27*; α(L)=0.00607 *9*; α(M)=0.001525 *22* α(N)=0.000394 *6*; α(O)=8.11×10^{-5} *11*; α(P)=9.84×10^{-6} *14* Mult.: A_2=+0.5 *2* and R=1.26 *12* (2014Au03).
1625.34	(17/2+)	130.3 *2*	20.1 *21*	1494.85	(17/2+)	(M1)	5.69 *8*	α(K)=4.61 *7*; α(L)=0.826 *12*; α(M)=0.1957 *29* α(N)=0.0507 *7*; α(O)=0.01086 *16*; α(P)=0.001499 *22* Mult.: A_2=−0.36 *7* (2015Au01).
		364.1 *3*	33.5 *16*	1261.29	(15/2+)	(M1)	0.325 *5*	α(K)=0.264 *4*; α(L)=0.0464 *7*; α(M)=0.01098 *16* α(N)=0.00284 *4*; α(O)=0.000609 *9*; α(P)=8.41×10^{-5} *12* Mult.: A_2=−0.11 *3* (2015Au01).
		876.1 *2*	100 *3*	749.36	(13/2+)	(E2)	0.01002 *14*	α(K)=0.00775 *11*; α(L)=0.001720 *24*; α(M)=0.000418 *6* α(N)=0.0001081 *15*; α(O)=2.264×10^{-5} *32*; α(P)=2.93×10^{-6} *4* Mult.: A_2=+0.16 *3* (2015Au01).
1705.03	(21/2−)	476.2 *2*	100	1228.96	(17/2−)	(E2)	0.0378 *5*	α(K)=0.02528 *35*; α(L)=0.00938 *13*; α(M)=0.002378 *33* α(N)=0.000615 *9*; α(O)=0.0001257 *18*; α(P)=1.491×10^{-5} *21* Mult.: A_2=0.22 *7* in 1983Dy02. Other: A_2=+0.13 *4* (2015Au01).
1790.3		295.5 *3*	100	1494.85	(17/2+)			E_γ,I_γ: From ^{192}Pt(^{14}N,5nγ).
1856.0	(13/2+)	242.8 *7*	15.4 *14*	1613.3	(11/2+)			
		567.3 *4*	100 *5*	1288.6	(9/2+)	(E2)	0.02506 *35*	α(K)=0.01776 *25*; α(L)=0.00548 *8*; α(M)=0.001373 *19* α(N)=0.000355 *5*; α(O)=7.31×10^{-5} *10*; α(P)=8.92×10^{-6} *13* Mult.: A_2=+0.5 *3* and R=1.2 *3* (2014Au03).
1921.30	(21/2+)	216.3 *3*	2.3[#] *6*	1705.03	(21/2−)	[E1]	0.0696 *10*	α(K)=0.0561 *8*; α(L)=0.01026 *15*; α(M)=0.002429 *35* α(N)=0.000623 *9*; α(O)=0.0001295 *19*; α(P)=1.648×10^{-5} *24*
		295.9 *2*	100 *5*	1625.34	(17/2+)	(E2)	0.1374 *19*	α(K)=0.0700 *10*; α(L)=0.0501 *7*; α(M)=0.01310 *19* α(N)=0.00339 *5*; α(O)=0.000679 *10*; α(P)=7.48×10^{-5} *11* Mult.: A_2=+0.11 *4* (2015Au01).
		426.5 *2*	98 *5*	1494.85	(17/2+)	(E2)	0.0497 *7*	α(K)=0.0318 *4*; α(L)=0.01345 *19*; α(M)=0.00344 *5* α(N)=0.000889 *13*; α(O)=0.0001807 *25*; α(P)=2.107×10^{-5} *30* Mult.: A_2=+0.14 *7* (2015Au01).
1980.6	(23/2−)	275.5 *2*	100	1705.03	(21/2−)	(M1)	0.695 *10*	α(K)=0.564 *8*; α(L)=0.1000 *14*; α(M)=0.02365 *33* α(N)=0.00612 *9*; α(O)=0.001311 *19*; α(P)=0.0001811 *26* Mult.: A_2=−0.47 *2* (2015Au01).
2004.3	(23/2+)	83.0 *4*	100[#] *33*	1921.30	(21/2+)	[M1]	3.99 *8*	α(L)=3.04 *6*; α(M)=0.720 *14* α(N)=0.187 *4*; α(O)=0.0400 *8*; α(P)=0.00552 *11*

From ENSDF

$^{201}_{85}At_{116}$-5

γ(^{201}At) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[@]	Comments
2004.3	(23/2+)	299.3 *2*	20[#] *3*	1705.03	(21/2−)	[E1]	0.0325 *5*	α(K)=0.0264 *4*; α(L)=0.00463 *7*; α(M)=0.001093 *15* α(N)=0.000281 *4*; α(O)=5.88×10^{-5} *8*; α(P)=7.63×10^{-6} *11*
2050.8	(25/2+)	46.5 *2*	100	2004.3	(23/2+)			
2076.9	(23/2−)	371.9 *4*	100	1705.03	(21/2−)	D		Mult.: A_2=−0.1 *1* in 1983Dy02.
2147.2	(21/2−)	442.6 *4*	86 *3*	1705.03	(21/2−)	(E2)	0.0453 *6*	α(K)=0.0294 *4*; α(L)=0.01189 *17*; α(M)=0.00303 *4* α(N)=0.000784 *11*; α(O)=0.0001596 *23*; α(P)=1.872×10^{-5} *27* Mult.: A_2=+0.35 *8* (2015Au01); consistent with ΔJ=0 transition.
		917.8 *4*	100 *6*	1228.96	(17/2−)	(E2)	0.00914 *13*	α(K)=0.00711 *10*; α(L)=0.001539 *22*; α(M)=0.000373 *5* α(N)=9.64×10^{-5} *14*; α(O)=2.023×10^{-5} *28*; α(P)=2.63×10^{-6} *4* Mult.: A_2=+0.37 *6* (2015Au01).
2232.1	(15/2+)	618.8 *6*	100	1613.3	(11/2+)	(E2)	0.02065 *29*	α(K)=0.01498 *21*; α(L)=0.00427 *6*; α(M)=0.001062 *15* α(N)=0.000275 *4*; α(O)=5.68×10^{-5} *8*; α(P)=7.016×10^{-6} *99* Mult.: A_2=+0.6 *4* and R=1.1 *4* (2014Au03).
2319.8	(29/2+)	269.0 *2*	100[#] *9*	2050.8	(25/2+)	E2	0.1842 *26*	α(K)=0.0865 *12*; α(L)=0.0726 *10*; α(M)=0.01907 *27* α(N)=0.00493 *7*; α(O)=0.000985 *14*; α(P)=0.0001072 *15* B(E2)(W.u.)=1.27×10^{-3} *6* Mult.: From K/(L+M+...)exp=0.93 *5* (2015Au01).
		339.2 *2*	10[#] *3*	1980.6	(23/2−)	E3	0.464 *7*	α(K)=0.1364 *19*; α(L)=0.2413 *34*; α(M)=0.0656 *9* α(N)=0.01707 *24*; α(O)=0.00341 *5*; α(P)=0.000371 *5* B(E3)(W.u.)=22 *6* Mult.: From K/(L+M+...)exp=0.45 *4* (2015Au01).
2518.9	(25/2−)	371.7 *4*	100	2147.2	(21/2−)	(E2)	0.0715 *10*	α(K)=0.0425 *6*; α(L)=0.02159 *31*; α(M)=0.00557 *8* α(N)=0.001440 *21*; α(O)=0.000291 *4*; α(P)=3.32×10^{-5} *5* Mult.: A_2=+0.16 *6* (2015Au01).
2637.6	(25/2+)	716.3 *4*	100	1921.30	(21/2+)	(E2)	0.01509 *21*	α(K)=0.01130 *16*; α(L)=0.00286 *4*; α(M)=0.000705 *10* α(N)=0.0001822 *26*; α(O)=3.79×10^{-5} *5*; α(P)=4.78×10^{-6} *7* Mult.: A_2=+0.46 *4* (2015Au01).
2990.2	(23/2−)	1068.9[&] *4*	100	1921.30	(21/2+)	D		Mult.: A_2=−0.47 *5* (2015Au01).
3135.2	(25/2−)	145.0 *4*	100	2990.2	(23/2−)	(M1)	4.20 *7*	α(K)=3.40 *5*; α(L)=0.609 *10*; α(M)=0.1441 *23* α(N)=0.0373 *6*; α(O)=0.00799 *13*; α(P)=0.001104 *18* Mult.: A_2=−0.5 *2* (2015Au01).
3219.2		581.6 *4*	100	2637.6	(25/2+)	D		Mult.: A_2=−0.44 *7* (2015Au01).
3240.9	(33/2+)	921.1 *4*	100	2319.8	(29/2+)	(E2)	0.00908 *13*	α(K)=0.00706 *10*; α(L)=0.001525 *21*; α(M)=0.000370 *5* α(N)=9.56×10^{-5} *13*; α(O)=2.005×10^{-5} *28*; α(P)=2.61×10^{-6} *4* Mult.: A_2=+0.20 *3* (2015Au01).
3245.4	(29/2+)	607.8 *4*	100	2637.6	(25/2+)	(E2)	0.02148 *30*	α(K)=0.01551 *22*; α(L)=0.00449 *6*; α(M)=0.001119 *16* α(N)=0.000289 *4*; α(O)=5.98×10^{-5} *8*; α(P)=7.37×10^{-6} *10* Mult.: A_2=+0.35 *8* (2015Au01).
3369.6		1049.9[&] *4*	100	2319.8	(29/2+)	D		Mult.: A_2=−0.7 *3* (2015Au01).
3379.6	(27/2−)	244.4 *4*	100	3135.2	(25/2−)	(M1)	0.968 *14*	α(K)=0.785 *12*; α(L)=0.1395 *21*; α(M)=0.0330 *5*

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$\gamma(^{201}At)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[@]	Comments
								α(N)=0.00855 *13*; α(O)=0.001830 *27*; α(P)=0.000253 *4* Mult.: A_2=−0.59 *9* (2015Au01).
3504.4		135.0[&] *4*	29.4 *24*	3369.6				
		263.6 *4*	71 *12*	3240.9	(33/2+)	D		Mult.: A_2=−0.26 *9* (2015Au01).
		1184.5 *4*	100 *12*	2319.8	(29/2+)	D,Q		Mult.: A_2=+0.40 *8* (2015Au01).
3621.8		402.6 *4*	100	3219.2		D		Mult.: A_2=−0.7 *2* (2015Au01).
3666.5	(29/2−)	286.9 *4*	100	3379.6	(27/2−)	(M1)	0.622 *9*	α(K)=0.505 *7*; α(L)=0.0894 *13*; α(M)=0.02113 *31* α(N)=0.00547 *8*; α(O)=0.001172 *17*; α(P)=0.0001619 *24* Mult.: A_2=−0.47 *3* (2015Au01).
3693.9		448.5 *4*	100	3245.4	(29/2+)	D		Mult.: A_2=−0.4 *2* (2015Au01).
3699.7		1379.9[&] *5*	100	2319.8	(29/2+)			
3779.1		538.2 *4*	100	3240.9	(33/2+)			
3785.9		540.5 *5*	100	3245.4	(29/2+)			
3853.3		153.6[&] *4*	100	3699.7				
3952.8		448.4 *4*	100	3504.4		D		Mult.: A_2=−0.3 *2* (2015Au01).
3983.8	(31/2−)	317.3 *4*	100	3666.5	(29/2−)	(M1)	0.472 *7*	α(K)=0.383 *6*; α(L)=0.0677 *10*; α(M)=0.01601 *23* α(N)=0.00415 *6*; α(O)=0.000888 *13*; α(P)=0.0001226 *18* Mult.: A_2=−0.81 *9* (2015Au01).
4111.4		870.5[&] *4*	100	3240.9	(33/2+)			
4159.0		206.2 *4*	100	3952.8				
4256.1	(33/2−)	272.3 *4*	100	3983.8	(31/2−)	(M1)	0.718 *10*	α(K)=0.583 *8*; α(L)=0.1033 *15*; α(M)=0.0244 *4* α(N)=0.00633 *9*; α(O)=0.001355 *20*; α(P)=0.0001871 *27* Mult.: A_2=−0.45 *11* (2015Au01).
4454.0	(35/2−)	197.9 *4*	100	4256.1	(33/2−)	(M1)	1.745 *26*	α(K)=1.414 *21*; α(L)=0.252 *4*; α(M)=0.0596 *9* α(N)=0.01545 *23*; α(O)=0.00331 *5*; α(P)=0.000457 *7* Mult.: A_2=−0.80 *12* (2015Au01).
4789.0	(37/2−)	335.0 *4*	100	4454.0	(35/2−)	(M1)	0.407 *6*	α(K)=0.331 *5*; α(L)=0.0583 *8*; α(M)=0.01379 *20* α(N)=0.00357 *5*; α(O)=0.000765 *11*; α(P)=0.0001056 *15* Mult.: A_2=−0.66 *4* (2015Au01).

† From ^{165}Ho(^{40}Ar,4nγ), unless otherwise stated.
‡ Based on the angular distribution data in ^{165}Ho(^{40}Ar,4nγ), unless otherwise stated.
# Determined by the evaluator from I(γ+ce) in ^{165}Ho(^{40}Ar,4nγ) and α.
@ Additional information 1.
& Placement of transition in the level scheme is uncertain.

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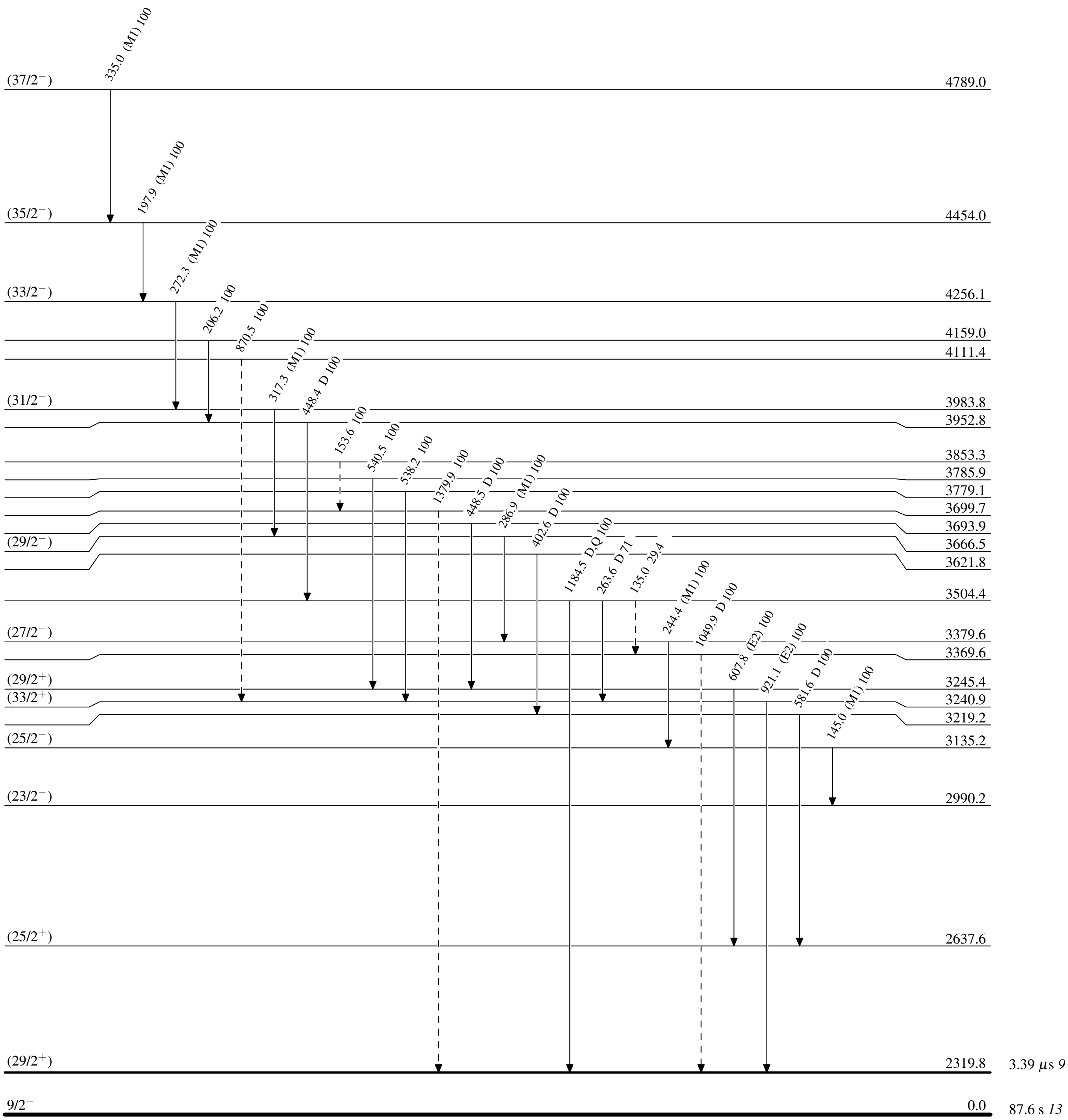
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



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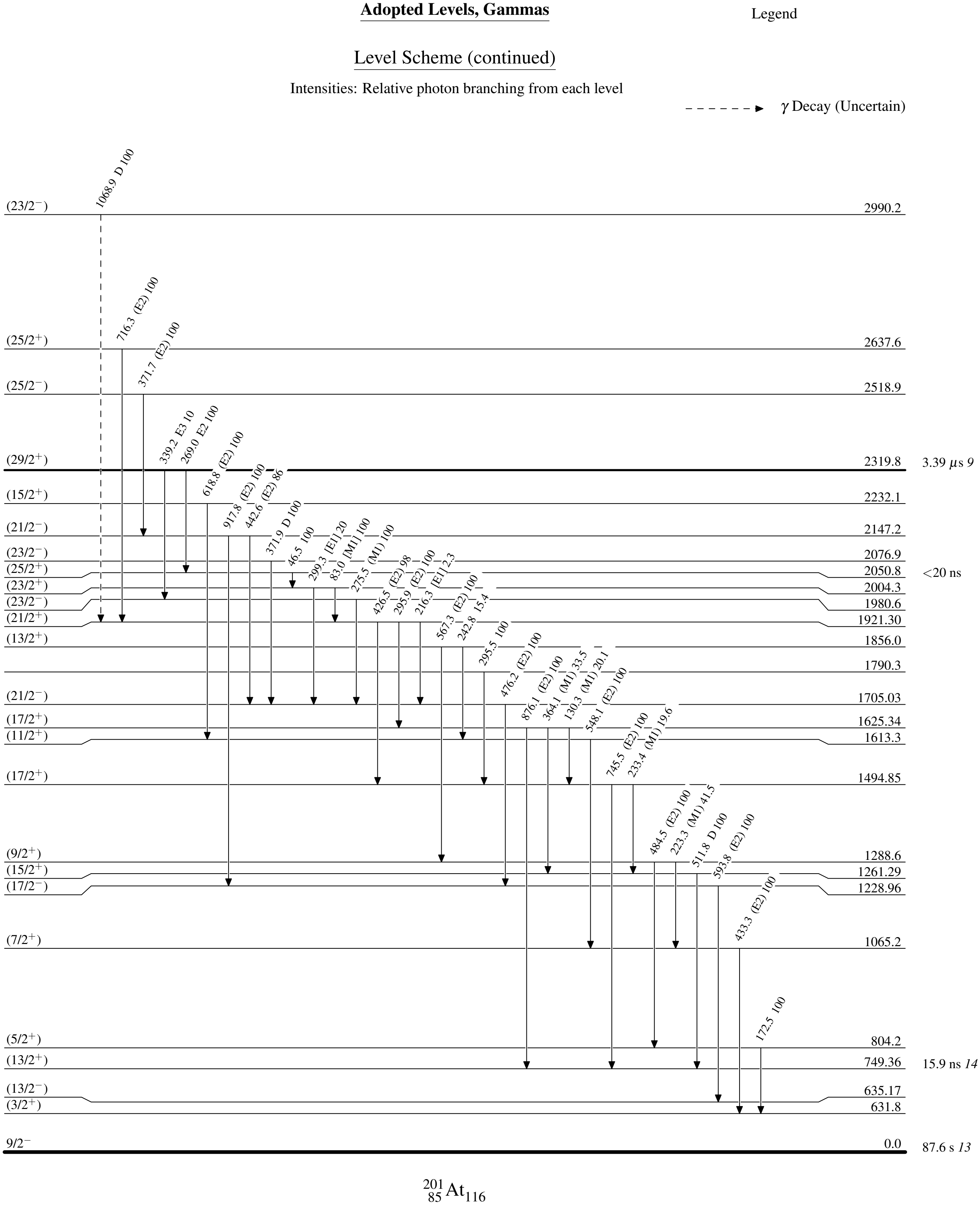
Adopted Levels, Gammas

Level Scheme (continued)

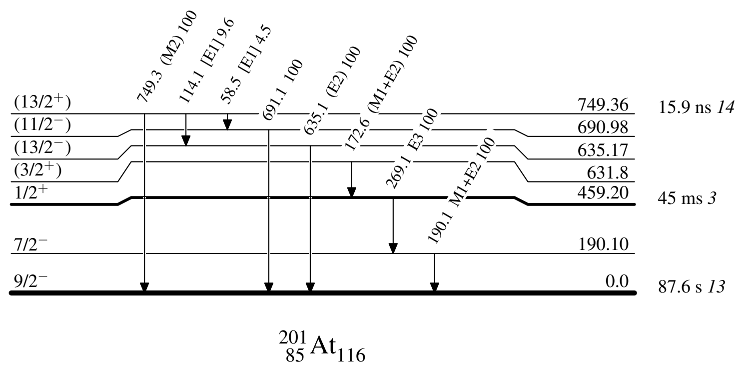
Intensities: Relative photon branching from each level



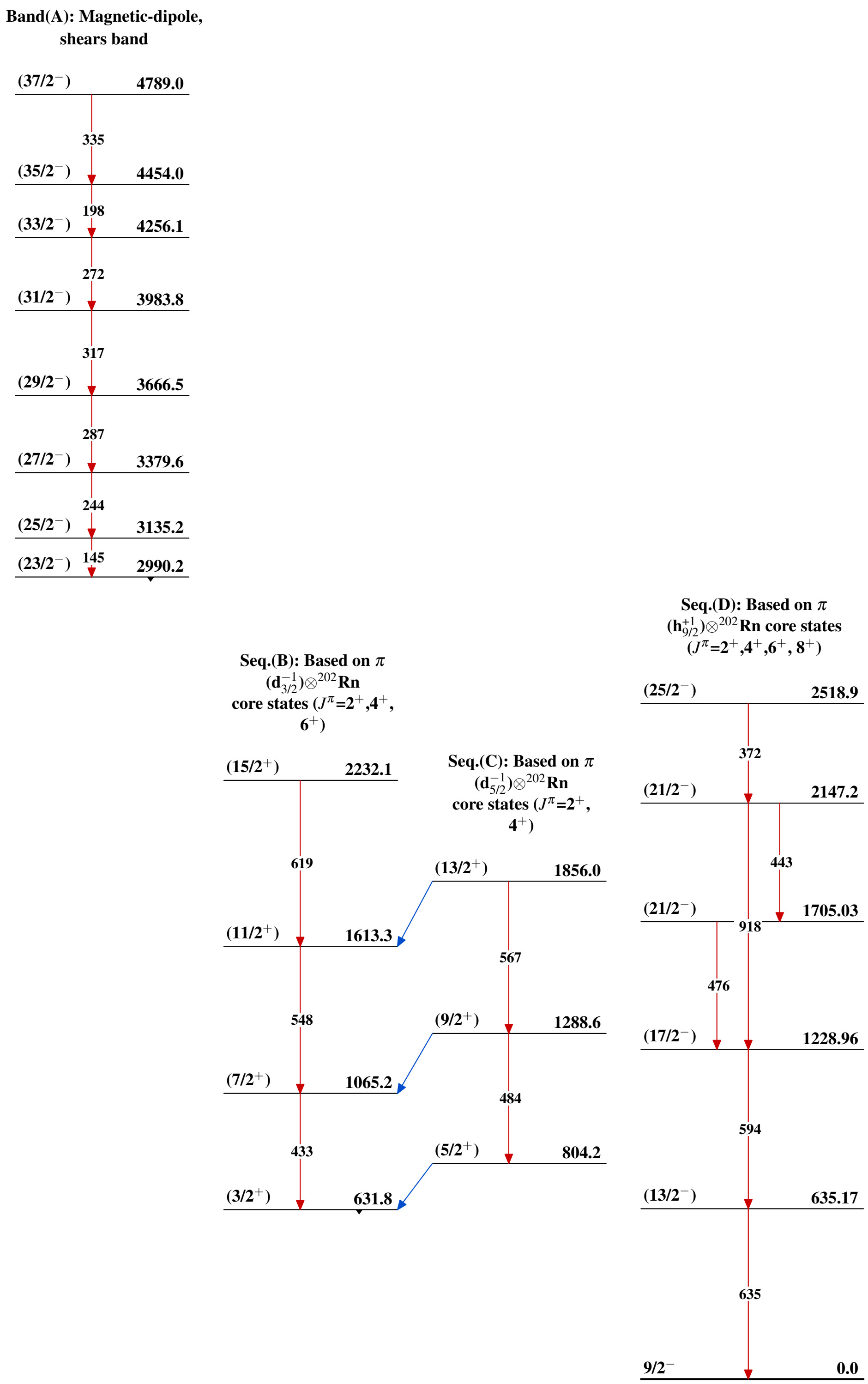
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



Adopted Levels, Gammas



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