Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 166, 1 (2020)	20-Apr-2020

Q(β^-)=−5262 *16*; S(n)=9168 *27*; S(p)=1920 *19*; Q(α)=6019.6 *17* 2017Wa10

^{205}At Levels

Cross Reference (XREF) Flags

- A ^{205}Rn ε decay
- B ^{209}Fr α decay
- C ^{197}Au(^{13}C,5nγ)
- D ^{197}Au(^{12}C,4nγ)

E(level)†	Jπ‡	$T_{1/2}$	XREF	Comments
0.0#	9/2−	26.9 min *8*	ABCD	%ε+%β+=90 *2*; %α=10 *2* μ=4.111 *67*; Q=−0.61 *31* %α: From 1974Ho27. Other: %α=18.4 *16* (1961La02). Jπ: Directly measured using the resonance-ionization spectroscopy technique (2018Cu02). π from μ. A_2=+0.081 *4* A_4=−0.047 *7*, δ_{02}=+0.041 *2*, δ_{04}=−0.027 *4* and L=2 component of 0.17% for ^{205}At g.s. α decay (1996Sc35,1997Sc26,2000Sc46). $T_{1/2}$: Weighted average of 25 min *2* (1954Bu67), 26.2 min *5* (1963Ho18), 25.0 min *5* (1968Go12), 30 min *1* (1969Ba69), 27.2 min *6* (1970DaZM), and 30.0 min *7* (1975BaYI). μ: From 2018Cu02. The uncertainty includes statistical (Δσ(stat)=0.034) and systematics (Δσ(stat)=0.056) ones added in quadrature. Q: From 2018Cu02. The uncertainty includes statistical (Δσ(stat)=0.08) and systematics (Δσ(stat)=0.30) ones added in quadrature.
265.05 *22*	(7/2)−		A	Jπ: 264.9γ (E2+M1) to 9/2−.
620.08 *24*	(5/2−,7/2)		A	Jπ: 354.9γ to (7/2)−, 620.2γ to 9/2−; population in ^{205}Rn ε decay (Jπ=5/2−).
638.20@ *8*	11/2−		CD	Jπ: 638.2γ M1+E2 to 9/2−.
664.25@ *9*	13/2−		CD	Jπ: 664.3γ E2 to 9/2−.
729.58 *24*	(5/2−,7/2)		A	Jπ: 464.5γ to (7/2)−, 729.6γ to 9/2−; population in ^{205}Rn ε decay (Jπ=5/2−).
940.1? *4*	(3/2−,5/2,7/2)		A	Jπ: 464.5γ to (7/2)−; population in ^{205}Rn ε decay (Jπ=5/2−).
969.81& *11*	13/2+		CD	Jπ: 331.6γ E1 to 11/2−; 969.6γ M2 to 9/2−.
1132.28a *10*	15/2−		CD	Jπ: 468.0γ M1+E2 to 13/2−; 494.1γ E2 to 11/2−.
1230.58a *11*	17/2−		CD	Jπ: 98.4γ M1+E2 to 15/2−; 566.4γ E2 to 13/2−.
1441.35g *13*	15/2+		CD	Jπ: 471.5γ M1+E2 to 13/2+.
1563.55j *21*	21/2−		CD	Jπ: 332.9γ E2 to 17/2−.
1756.10g *16*	17/2+		CD	Jπ: 314.9γ M1+E2 to 15/2+; 786.2γ E2 to 13/2+.
1862.29 *11*	19/2−		CD	Jπ: 631.8γ M1+E2 to 17/2−; 730.0γ E2 to 15/2−.
1877.74 *13*	17/2+		CD	Jπ: 121.7γ to 17/2+; 436.3γ M1+E2 to 15/2+.
1935.97b *22*	23/2−		CD	Jπ: 332.9γ M1+E2 to 21/2−.
2054.31 *13*	21/2+		CD	Jπ: 118.1γ (E1) to 23/2−, 176.5γ E2 to 17/2+, 192.1γ E1 to 19/2−.
2062.61c *23*	25/2+	66.6 ns *12*	CD	Jπ: 8.3γ to 21/2+, 126.7γ E1 to 23/2−. $T_{1/2}$: Weighted average of 67.9 ns *14* (1984Da19) and 63.8 ns *21* (1982Sj01).
2339.64d *23*	29/2+	7.76 μs *14*	CD	Jπ: 277.1γ E2 to 25/2+, 403.6γ E3 to 23/2−. $T_{1/2}$: From γ(t) (beam on 1 μs, beam off 40 μs) in 1984Da19. Other:≈2.1 μs in 1982Sj01 from γ(t) using the 4 μs beam-off pulsing

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{205}At Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
			experiment.
2499.27[e] *24*	27/2⁻	C	Jπ: 563.3γ E2 to 23/2⁻.
2499.27+x		C	Additional information 1. E(level): Tentatively suggested in 1984Da19 to decay via γ rays with unknown energies to the 2499.2-keV, 2339.6-keV, 1563.5-keV and 1132.3-keV levels.
2696.27+x *10*		C	
2721.61[h] *25*	29/2⁺	C	Jπ: 659.0γ E2 to 25/2⁺.
3040.47+x *23*		C	
3221.8[f] *3*	29/2⁻	C	Jπ: 722.5γ M1+E2 to 27/2⁻.
3274.6[i] *3*	33/2⁺	C	Jπ: 553.0γ E2 to 29/2⁺.
3335.27+x *25*		C	
3382.9+x *3*		C	
3481.0 *3*	(31/2⁺)	C	Jπ: 259.2γ (E1) to 29/2⁻.
3505.2+x *4*		C	
3524.8[h] *3*	(31/2⁺)	C	Jπ: 303.0γ (E1) to 29/2⁻.
3700.8 *4*	(33/2⁺)	C	Jπ: 176.0γ (M1+E2) to (31/2⁺).
3795.3+x *4*		C	
3814.9[i] *3*	35/2⁺	C	Jπ: 540.3γ M1+E2 to 33/2⁺.
3894.9 *3*	(35/2)	C	Jπ: 620.3γ D to 33/2⁺.
3897.4+x *5*		C	
3954.5 *4*	(37/2⁺)	C	Jπ: 253.7γ (E2) to (33/2⁺).
4017.8+x *6*		C	
4150.1 *3*	(37/2)	C	Jπ: 335.2γ D to 35/2⁺.
4150.5+x *6*		C	
4341.5 *3*	37/2⁺	C	Jπ: 526.6γ M1+E2 to 35/2⁺.
4387.5+x *9*		C	
4405.8 *5*	(39/2⁺)	C	Jπ: 451.3γ M1+E2 to (37/2⁺).
4546.0 *4*	(39/2)	C	Jπ: 395.9γ D to (37/2).

[†] From least-squares fit to Eγ.

[‡] From the deduced γ-ray transition multipolarities. Specific details are given with most levels.

[#] configuration=$\pi(h^{+1}_{9/2})$.

[@] configuration=$\pi(h^{+1}_{9/2})\otimes\nu(f^{-2}_{5/2})_{2^+}$.

[&] configuration=$\pi(i^{+1}_{13/2})$.

[a] configuration=configuration=$\pi(h^{+1}_{9/2})\otimes\nu(f^{-2}_{5/2})_{4^+}$.

[b] configuration=$\pi((h^{+2}_{9/2})_{8^+},f^{+1}_{7/2})$.

[c] configuration=$\pi(h^{+1}_{9/2})\otimes\nu(i^{-1}_{13/2},f^{-1}_{5/2})_{9^-}$.

[d] configuration=$\pi((h^{+2}_{9/2})_{8^+},i^{+1}_{13/2})$.

[e] configuration=$\pi((h^{+2}_{9/2})_{8^+},f^{+1}_{7/2})\otimes\nu(f^{-2}_{5/2})_{2^+}$.

[f] configuration=$\pi((h^{+2}_{9/2})_{8^+},f^{+1}_{7/2})\otimes\nu(f^{-2}_{5/2})_{4^+}$.

[g] configuration=$\pi(i^{+1}_{13/2})\otimes\nu(f^{-2}_{5/2})_{2^+}$.

[h] configuration=$\pi(h^{+3}_{9/2})_{13/2^-}\otimes\nu(i^{-1}_{13/2},f^{-1}_{5/2})_{9^-}$.

[i] configuration=$\pi(h^{+3}_{9/2})_{17/2^-}\otimes\nu(i^{-1}_{13/2},f^{-1}_{5/2})_{9^-}$.

[j] configuration=$\pi(h^{+3}_{9/2})$.

Adopted Levels, Gammas (continued)

γ(^{205}At)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[†]	α[&]	Comments
265.05	(7/2)$^-$	264.9[@] *3*	100[@]	0.0	9/2$^-$	(E2+M1)		0.775 *12*	α(K)=0.629 *9*; α(L)=0.1115 *16*; α(M)=0.0264 *4* α(N)=0.00683 *10*; α(O)=0.001462 *21*; α(P)=0.000202 *3* Mult.: K/L(exp)=2.1 (1975ZeZY) implies a mixed E2+M1 with δ≈2.3.
620.08	(5/2$^-$,7/2)	354.9[@] *3*	14.8[@]	265.05	(7/2)$^-$				
		620.2[@] *3*	100[@]	0.0	9/2$^-$				
638.20	11/2$^-$	638.2 *1*	100	0.0	9/2$^-$	M1+E2	+0.20 *5*	0.0706 *15*	α(K)=0.0574 *13*; α(L)=0.01002 *19*; α(M)=0.00236 *5* α(N)=0.000612 *12*; α(O)=0.0001310 *25*; α(P)=1.81×10^{-5} *4* Mult.: α(K)exp=0.023 *4*, A_2=−0.35 *3*, A_4=−0.06 *4* (1984Da19); A_2=−0.36 *4* (1982Sj01).
664.25	13/2$^-$	664.3 *1*	100	0.0	9/2$^-$	E2		0.01770	α(K)=0.01305 *19*; α(L)=0.00350 *5*; α(M)=0.000868 *13* α(N)=0.000224 *4*; α(O)=4.65×10^{-5} *7*; α(P)=5.81×10^{-6} *9* Mult.: α(K)exp=0.013 *2*, A_2=0.21 *2*, A_4=0.04 *2* (1984Da19); A_2=0.25 *4* (1982Sj01).
729.58	(5/2$^-$,7/2)	464.5[@] *3*	100[@]	265.05	(7/2)$^-$				
		729.6[@] *3*	80[@]	0.0	9/2$^-$				
940.1?	(3/2$^-$,5/2,7/2)	675.0[@a] *3*	100[@]	265.05	(7/2)$^-$				
969.81	13/2$^+$	331.6 *1*	100[#] *23*	638.20	11/2$^-$	(E1)		0.0257	α(K)=0.0210 *3*; α(L)=0.00364 *5*; α(M)=0.000857 *12* α(N)=0.000220 *3*; α(O)=4.62×10^{-5} *7*; α(P)=6.03×10^{-6} *9* Mult.: A_2=−0.05 *4*, A_4=−0.08 *6* (1984Da19). Contaminated by the 332.9γ.
		969.6 *2*	27[#] *4*	0.0	9/2$^-$	M2		0.0588	α(K)=0.0468 *7*; α(L)=0.00911 *13*; α(M)=0.00219 *3* α(N)=0.000568 *8*; α(O)=0.0001214 *17*; α(P)=1.666×10^{-5} *24* Mult.: α(K)exp=0.06 *4*, α(L)exp=0.010 *7*, A_2=0.10 *12*, A_4=0.05 *20* (1984Da19).
1132.28	15/2$^-$	468.0 *1*	100[#] *7*	664.25	13/2$^-$	M1+E2	−0.30 *3*	0.155 *3*	α(K)=0.1254 *25*; α(L)=0.0224 *4*; α(M)=0.00530 *9* α(N)=0.001373 *23*; α(O)=0.000293 *5*; α(P)=4.03×10^{-5} *7* Mult.: α(K)exp=0.12, α(L)exp=0.027; A_2=−0.42 *1*, A_4=0.05 *2* (1984Da19); A_2=−0.35 *4* (1982Sj01).
		494.1 *1*	56[#] *6*	638.20	11/2$^-$	E2		0.0346	α(K)=0.0234 *4*; α(L)=0.00835 *12*; α(M)=0.00211 *3* α(N)=0.000546 *8*; α(O)=0.0001117 *16*; α(P)=1.334×10^{-5} *19* Mult.: A_2=0.25 *3*, A_4=0.03 *4* (1984Da19); A_2=0.31 *6* (1982Sj01).
1230.58	17/2$^-$	98.4 *4*	4.0[#] *4*	1132.28	15/2$^-$	M1+E2		12.58 *22*	α(K)=10.14 *18*; α(L)=1.86 *4*; α(M)=0.440 *8* α(N)=0.1139 *21*; α(O)=0.0244 *5*; α(P)=0.00337 *7* Mult.: α(exp)=17.0 *30*; A_2=−0.10 *13*, A_4=−0.15 *20* (1984Da19).

$^{205}_{85}At_{120}$-3

Adopted Levels, Gammas (continued)

γ(^{205}At) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[†]	α[&]	Comments
1230.58	17/2$^-$	566.4 *1*	100[#] *5*	664.25	13/2$^-$	E2		0.0251	α(K)=0.01782 *25*; α(L)=0.00551 *8*; α(M)=0.001380 *20* α(N)=0.000357 *5*; α(O)=7.35×10^{-5} *11*; α(P)=8.96×10^{-6} *13* Mult.: α(K)exp=0.020 *2*, α(L)exp=0.0060 *15*, A_2=0.21 *2*, A_4=0.02 *2* (1984Da19); A_2=0.28 *4* (1982Sj01).
1441.35	15/2$^+$	471.5 *1*	100	969.81	13/2$^+$	M1+E2	−0.21 *5*	0.157 *4*	α(K)=0.127 *3*; α(L)=0.0225 *5*; α(M)=0.00531 *10* α(N)=0.00138 *3*; α(O)=0.000295 *6*; α(P)=4.06×10^{-5} *8* Mult.: A_2=−0.35 *3*, A_4=−0.02 *4* (1984Da19); A_2=−0.32 *4* (1982Sj01).
1563.55	21/2$^-$	332.9 *2*	100	1230.58	17/2$^-$	E2		0.0972	α(K)=0.0540 *8*; α(L)=0.0322 *5*; α(M)=0.00835 *12* α(N)=0.00216 *3*; α(O)=0.000435 *7*; α(P)=4.87×10^{-5} *7* Mult.: α(K)exp=0.052 *5*, α(L)exp=0.025 *5* (deduced by assuming that 331.6γ is E1), A_2=0.19 *2*, A_4=−0.04 *3* (1984Da19); A_2=0.29 *5* (1982Sj01).
1756.10	17/2$^+$	314.9 *2*	100[#] *16*	1441.35	15/2$^+$	M1+E2		0.482	α(K)=0.391 *6*; α(L)=0.0691 *10*; α(M)=0.01634 *23* α(N)=0.00423 *6*; α(O)=0.000906 *13*; α(P)=0.0001252 *18* Mult.: α(L)exp=0.057 *11*, A_2=−0.16 *4*, A_4=0.04 *7* (1984Da19); A_2=A_2=−0.24 *6*, A_4=0.12 *10* (1982Sj01).
		786.2 *2*	30[#] *5*	969.81	13/2$^+$	E2		0.01246	α(K)=0.00948 *14*; α(L)=0.00225 *4*; α(M)=0.000550 *8* α(N)=0.0001423 *20*; α(O)=2.97×10^{-5} *5*; α(P)=3.79×10^{-6} *6* Mult.: A_2=0.47 *21*, A_4=−0.60 *40* (1984Da19); A_2=0.25 *6* (1982Sj01).
1862.29	19/2$^-$	631.8 *1*	16[#] *4*	1230.58	17/2$^-$	M1+E2		0.0746	α(K)=0.0607 *9*; α(L)=0.01054 *15*; α(M)=0.00249 *4* α(N)=0.000644 *9*; α(O)=0.0001379 *20*; α(P)=1.91×10^{-5} *3* Mult.: A_2=0.04 *26*, A_4=−0.06 *42* (1984Da19).
		730.0 *1*	100[#] *22*	1132.28	15/2$^-$	E2		0.01451	α(K)=0.01090 *16*; α(L)=0.00272 *4*; α(M)=0.000670 *10* α(N)=0.0001732 *25*; α(O)=3.60×10^{-5} *5*; α(P)=4.56×10^{-6} *7* Mult.: α(K)exp=0.013 *2*, A_2=0.19 *5*, A_4=0.01 *7* (1984Da19); A_2=0.25 *5* (1982Sj01).
1877.74	17/2$^+$	121.7 *3*	44[#] *8*	1756.10	17/2$^+$	[M1,E2]		6.91 *11*	α(K)=5.59 *9*; α(L)=1.005 *16*; α(M)=0.238 *4* α(N)=0.0617 *10*; α(O)=0.01321 *21*; α(P)=0.00182 *3*
		436.3 *1*	100[#] *47*	1441.35	15/2$^+$	M1+E2		0.199	α(K)=0.1621 *23*; α(L)=0.0284 *4*; α(M)=0.00671 *10* α(N)=0.001738 *25*; α(O)=0.000372 *6*; α(P)=5.14×10^{-5} *8* Mult.: A_2=−0.22 *8*, A_4=−0.10 *12* (1984Da19).
1935.97	23/2$^-$	372.4 *1*	100	1563.55	21/2$^-$	M1+E2	−0.05 *2*	0.305	α(K)=0.248 *4*; α(L)=0.0436 *7*; α(M)=0.01031 *15* α(N)=0.00267 *4*; α(O)=0.000572 *8*; α(P)=7.90×10^{-5} *12* Mult.: α(K)exp=0.24 *4*, α(L)exp=0.043 *4*, A_2=−0.19 *2*, A_4=0.05 *2* (1984Da19); A_2=−0.18 *4* (1982Sj01).
2054.31	21/2$^+$	118.1 *5*	4.2[#] *7*	1935.97	23/2$^-$	(E1)		0.306 *6*	α(K)=0.241 *5*; α(L)=0.0491 *9*; α(M)=0.01171 *21* α(N)=0.00299 *6*; α(O)=0.000611 *11*; α(P)=7.41×10^{-5} *13* Mult.: A_2=0.06 *18*, A_4=0.16 *31* (1984Da19).
		176.5 *1*	29[#] *4*	1877.74	17/2$^+$	E2		0.781	α(K)=0.215 *3*; α(L)=0.419 *6*; α(M)=0.1118 *16* α(N)=0.0289 *5*; α(O)=0.00571 *9*; α(P)=0.000594 *9* Mult.: A_2=0.14 *4*, A_4=−0.01 *6* (1984Da19); A_2=0.12 *6* (1982Sj01).

$^{205}_{85}At_{120}$-4

Adopted Levels, Gammas (continued)

$\gamma(^{205}At)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[†]	α[&]	Comments
2054.31	21/2$^+$	192.1 *1*	100[#] *8*	1862.29	19/2$^-$	E1		0.0927	α(K)=0.0745 *11*; α(L)=0.01385 *20*; α(M)=0.00328 *5* α(N)=0.000841 *12*; α(O)=0.0001744 *25*; α(P)=2.20×10^{-5} *3* Mult.: α(exp)<0.18; A_2=−0.04 *2*, A_4=0.01 *4* (1984Da19).
		298.3 *3*	21[#] *5*	1756.10	17/2$^+$	[E2]		0.1341	α(K)=0.0688 *10*; α(L)=0.0486 *7*; α(M)=0.01269 *19* α(N)=0.00328 *5*; α(O)=0.000658 *10*; α(P)=7.26×10^{-5} *11*
2062.61	25/2$^+$	(8.30 *13*)	5.1×10^{-4}[#] *11*	2054.31	21/2$^+$	[E2]		3.8×10^5 *4*	α(M)=2.87×10^5 *24* α(N)=7.4×10^4 *7*; α(O)=1.43×10^4 *12*; α(P)=1.40×10^3 *12* B(E2)(W.u.)=4.8 *7* E_γ: From level energy differences. Not observed directly but required by the coincidence relationships.
		126.7 *1*	100[#] *5*	1935.97	23/2$^-$	E1		0.257	α(K)=0.204 *3*; α(L)=0.0408 *6*; α(M)=0.00971 *14* α(N)=0.00248 *4*; α(O)=0.000508 *8*; α(P)=6.21×10^{-5} *9* B(E1)(W.u.)=4.5×10^{-7} *7* Mult.: α(exp)=0.87 *31*; A_2=−0.06 *2*, A_4=−0.03 *1* (1984Da19).
2339.64	29/2$^+$	277.1 *1*	55.0[#] *23*	2062.61	25/2$^+$	E2		0.1679	α(K)=0.0810 *12*; α(L)=0.0646 *9*; α(M)=0.01695 *24* α(N)=0.00438 *7*; α(O)=0.000876 *13*; α(P)=9.57×10^{-5} *14* B(E2)(W.u.)=0.000182 *8* Mult.: α(L)exp=0.064 *8*; A_2=0.10 *7*, A_4=0.01 *10* (1984Da19).
		403.6 *1*	100[#] *4*	1935.97	23/2$^-$	E3		0.240	α(K)=0.0923 *13*; α(L)=0.1093 *16*; α(M)=0.0294 *5* α(N)=0.00764 *11*; α(O)=0.001536 *22*; α(P)=0.0001705 *24* B(E3)(W.u.)=19.1 *6* Mult.: α(K)exp=0.092 *5*, α(L)exp=0.12 *1*, α(M)exp=0.044 *11* (assuming that 494.1γ is E2); A_2=0.03 *6*, A_4=0.01 *8* (1984Da19). The isotropic angular distributions are attributed to relaxation of the alignment during the long lifetime of the isomer (1984Da19).
2499.27	27/2$^-$	563.3 *1*	100	1935.97	23/2$^-$	E2		0.0255	α(K)=0.0180 *3*; α(L)=0.00560 *8*; α(M)=0.001403 *20* α(N)=0.000363 *5*; α(O)=7.47×10^{-5} *11*; α(P)=9.10×10^{-6} *13* Mult.: α(K)exp=0.028 *4*; A_2=0.30 *4*, A_4=−0.08 *6* (1984Da19).
2696.27+x		197.0 *1*	100	2499.27+x		D			Mult.: A_2=−0.38 *10*, A_4=−0.21 *16* (1984Da19).
2721.61	29/2$^+$	659.0 *1*	100	2062.61	25/2$^+$	E2		0.0180	α(K)=0.01326 *19*; α(L)=0.00358 *5*; α(M)=0.000887 *13* α(N)=0.000229 *4*; α(O)=4.75×10^{-5} *7*; α(P)=5.93×10^{-6} *9* Mult.: α(K)exp=0.017 *3*; A_2=0.41 *3*, A_4=−0.12 *5* (1984Da19).
3040.47+x		344.2 *2*	100	2696.27+x		D			Mult.: A_2=−0.37 *6*, A_4=0.07 *8* (1984Da19).

$^{205}_{85}At_{120}$-5

Adopted Levels, Gammas (continued)

γ(^{205}At) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[†]	α[&]	Comments
3221.8	29/2$^-$	722.5 *1*	100	2499.27	27/2$^-$	M1+E2	−0.10 *5*	0.0521 *9*	α(K)=0.0424 *7*; α(L)=0.00734 *12*; α(M)=0.00173 *3* α(N)=0.000448 *7*; α(O)=9.60×10^{-5} *16*; α(P)=1.328×10^{-5} *22* Mult.: α(K)exp=0.025 *6*; A_2=−0.43 *8*, A_4=−0.02 *12* (1984Da19).
3274.6	33/2$^+$	553.0 *1*	100	2721.61	29/2$^+$	E2		0.0266	α(K)=0.0187 *3*; α(L)=0.00591 *9*; α(M)=0.001484 *21* α(N)=0.000384 *6*; α(O)=7.89×10^{-5} *11*; α(P)=9.59×10^{-6} *14* Mult.: α(K)exp=0.03 *1*; A_2=0.38 *3*, A_4=−0.04 *4* (1984Da19).
3335.27+x		294.8 *1*	100	3040.47+x		D			Mult.: A_2=−0.26 *10*, A_4=0.14 *12* (1984Da19).
3382.9+x		342.4 *2*	100	3040.47+x		D			Mult.: A_2=−0.64 *9*, A_4=0.02 *13* (1984Da19).
3481.0	(31/2$^+$)	259.2 *1*	100	3221.8	29/2$^-$	(E1)		0.0453	α(K)=0.0367 *6*; α(L)=0.00656 *10*; α(M)=0.001549 *22* α(N)=0.000398 *6*; α(O)=8.30×10^{-5} *12*; α(P)=1.069×10^{-5} *15* Mult.: α(exp)≤0.20; A_2=−0.24 *13*, A_4=−0.13 *20* (1984Da19).
3505.2+x		122.3 *2*	100	3382.9+x		D			Mult.: A_2=−0.36 *6*, A_4=0.01 *9* (1984Da19).
3524.8	(31/2$^+$)	(43.8 *4*)		3481.0	(31/2$^+$)				E_γ: From level energy differences. Not observed directly but required by the coincidence relationships.
		303.0 *1*	100	3221.8	29/2$^-$	(E1)		0.0316	α(K)=0.0257 *4*; α(L)=0.00450 *7*; α(M)=0.001061 *15* α(N)=0.000273 *4*; α(O)=5.71×10^{-5} *8*; α(P)=7.42×10^{-6} *11* Mult.: α(exp)≤0.20; A_2=−0.22 *10*, A_4=0.09 *15* (1984Da19).
3700.8	(33/2$^+$)	176.0 *2*	100	3524.8	(31/2$^+$)	(M1+E2)		2.43	α(K)=1.97 *3*; α(L)=0.351 *5*; α(M)=0.0831 *12* α(N)=0.0215 *3*; α(O)=0.00461 *7*; α(P)=0.000636 *10* Mult.: α(exp)=2.0 *10*; A_2=−0.16 *8*, A_4=0.00 *12* (1984Da19).
3795.3+x		290.1 *1*	100	3505.2+x		D			Mult.: A_2=−0.22 *11*, A_4=0.20 *14* (1984Da19).
3814.9	35/2$^+$	540.3 *1*	100	3274.6	33/2$^+$	M1+E2	−0.07 *5*	0.1123 *18*	α(K)=0.0914 *15*; α(L)=0.01594 *24*; α(M)=0.00376 *6* α(N)=0.000974 *15*; α(O)=0.000209 *4*; α(P)=2.89×10^{-5} *5* Mult.: α(K)exp=0.12 *2*; A_2=−0.38 *9*, A_4=−0.04 *14* (1984Da19).
3894.9	(35/2)	620.3 *1*	100	3274.6	33/2$^+$	D			Mult.: A_2=−0.42 *20*, A_4=0.30 *35* (1984Da19).
3897.4+x		102.1 *3*	100	3795.3+x		D			Mult.: A_2=−0.23 *12*, A_4=−0.03 *17* (1984Da19).
3954.5	(37/2$^+$)	253.7 *2*	100	3700.8	(33/2$^+$)	(E2)		0.222	α(K)=0.0986 *14*; α(L)=0.0917 *14*; α(M)=0.0241 *4* α(N)=0.00624 *9*; α(O)=0.001244 *18*; α(P)=0.0001344 *20* Mult.: A_2=0.10 *11*, A_4=0.23 *12* (1984Da19).
4017.8+x		120.4 *2*	100	3897.4+x		D			Mult.: A_2=−0.35 *14*, A_4=0.00 *23* (1984Da19).
4150.1	(37/2)	335.2 *1*	100	3814.9	35/2$^+$	D			Mult.: A_2=−0.45 *20*, A_4=−0.10 *28* (1984Da19).
4150.5+x		132.7 *2*	100	4017.8+x		D			Mult.: A_2=−0.14 *8*, A_4=0.10 *11* (1984Da19).
4341.5	37/2$^+$	526.6 *1*	100	3814.9	35/2$^+$	M1+E2	−0.23 *8*	0.116 *4*	α(K)=0.094 *4*; α(L)=0.0166 *5*; α(M)=0.00393 *11* α(N)=0.00102 *3*; α(O)=0.000218 *6*; α(P)=3.00×10^{-5} *9* Mult.: α(K)exp<0.20; A_2=−0.65 *11*, A_4=0.45 *15* (1984Da19).
4387.5+x		237.0 *6*	100	4150.5+x					
4405.8	(39/2$^+$)	451.3 *3*	100	3954.5	(37/2$^+$)	M1+E2		0.182	α(K)=0.1481 *21*; α(L)=0.0259 *4*; α(M)=0.00612 *9* α(N)=0.001586 *23*; α(O)=0.000340 *5*; α(P)=4.69×10^{-5} *7* Mult.: α(K)exp=0.10 *6*, A_2=−0.46 *7*, A_4=0.14 *11* (1984Da19).
4546.0	(39/2)	395.9 *2*	100	4150.1	(37/2)	D			Mult.: A_2=−0.37 *12*, A_4=−0.27 *21* (1984Da19).

$^{205}_{85}At_{120}$-6

Adopted Levels, Gammas (continued)

$\gamma(^{205}At)$ (continued)

† From $^{197}Au(^{13}C,5n\gamma)$, unless otherwise stated.
‡ From the measured conversion coefficients, angular distributions data and multiple decay branches in $^{197}Au(^{12}C,4n\gamma)$ (1982Sj01) and $^{197}Au(^{13}C,5n\gamma)$ (1984Da19). Specific arguments are given with most γ's.
# From delayed (7.76 μs isomer) intensities in $^{197}Au(^{13}C,5n\gamma)$.
@ From ^{205}Rn ε decay.
& Additional information 2.
[a] Placement of transition in the level scheme is uncertain.

$^{205}_{85}At_{120}$-7

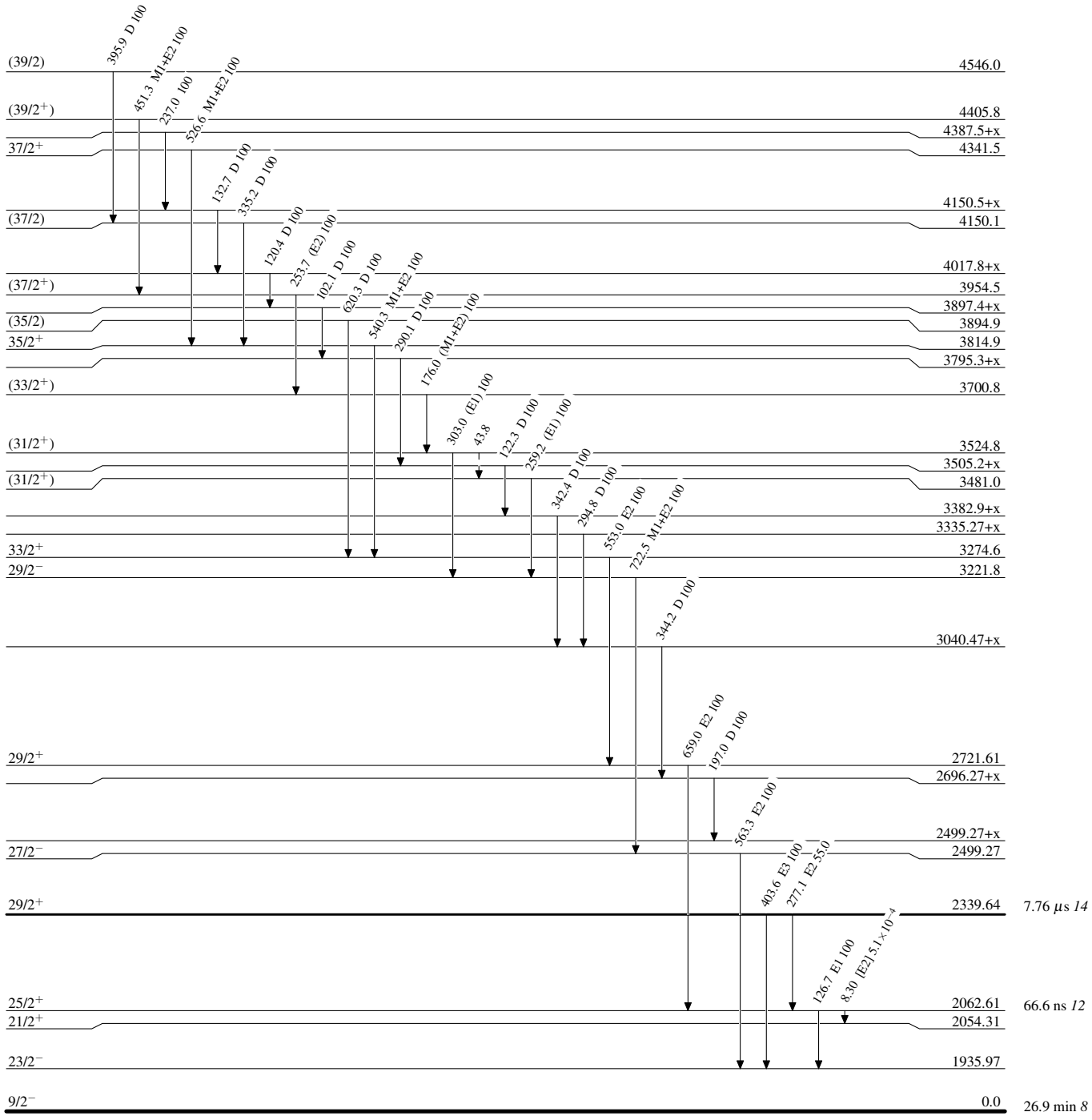
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{205}_{85}At_{120}$

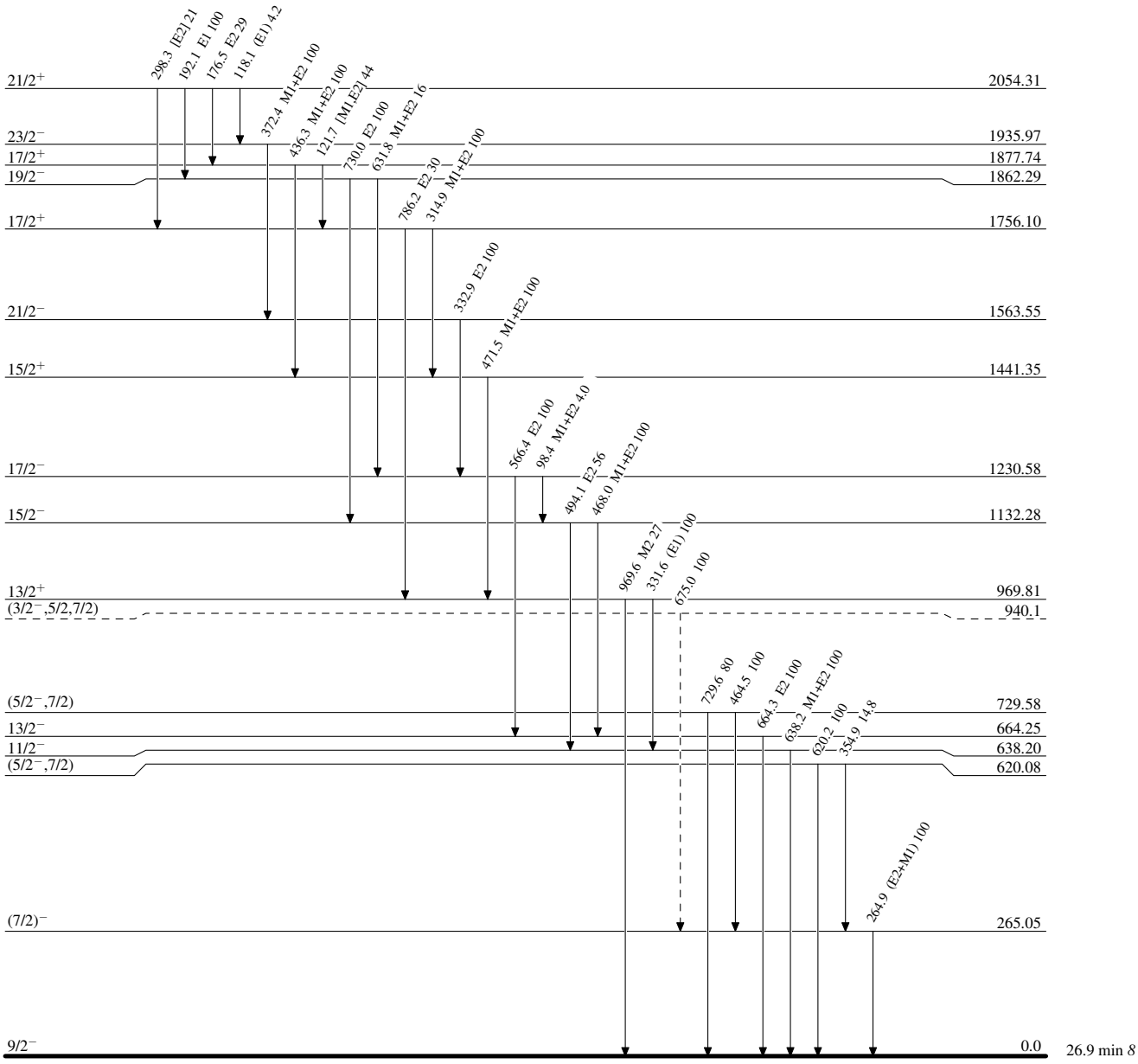
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{205}_{85}At_{120}$