Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 122, 293 (2014)	30-Jun-2013

Q(β^-)=−802.1 *17*; S(n)=5646.2 *3*; S(p)=6155.4 *4*; Q(α)=5244.50 *21* 2012Wa38
Additional information 1.
Other reactions:
Fission: 1997Vl02, 1997Vl01, 1997Ar09, 1996Vl01, 1993De17, 1992Ge01.
Spontaneous fission: 2012Ha06, 2011Yo12, 2008Ku21, 2006En04, 2005Re16, 2004Ro01, 2001Vl02.
^{239}Pu(n,F): 2012PrZZ, 2011Ho11, 2011Hu06, 2011Ki09, 2011Mu07.
^{239}Pu(n,n′): 1996Yu05, 1992Lo08.
^{239}Pu(n,n′) E< 10 MeV (2003Hi21).
^{239}Pu(n.n′) E< 20 MeV. Calculated σ, neutron spectrum (2011Ro24). Others: 2012Ba38, 2011Mu04.
^{239}Pu(n,n′) E< 300 MeV, calculated σ (2010Ha06).
^{239}Pu(γ,γ') E< 5.5 MeV deduced prompt γ-ray transitions (2011Jo11).
^{239}Pu(α,α') E=55 MeV, measured Eγ,Iγ(θ), $\gamma\gamma$ coin (2011Bu11).
Cluster decay:
^{239}Pu(α): calculated $T_{1/2}$, branching ratios (2012Sa31). Others: 2013Fe03, 2010Ni02, 2009Dr05, 2007Ro08.
^{239}Pu(^{33}Si): calculated $T_{1/2}$ (2011Sh13).
^{239}Pu(^{28}Mg): calculated Q(β^-)value, $T_{1/2}$ (2012Sa31).
^{239}Pu(^{34}Mg): calculated $T_{1/2}$ (2012Ku29).
^{239}Pu(^{30}Mg): calculated $T_{1/2}$ (2010Ni13).
Nuclear Structure.
^{239}Pu: calculated single-quasiparticle energies (2005Pa73).
^{239}Pu: calculated Coriolis decoupling factors (2009Mi02).
^{239}Pu: rotational bands (2009Ra27).
^{239}Pu: K-forbidden log *ft* values (2009So02).
^{239}Pu: evaluated data, Decay Data Evaluation Project (DDEP) (2008BeZV).
^{239}Pu: compiled data on superdeformed bands and fission isomers (2002Si26).
^{239}Pu: x-ray transition energies (2003De44).
Others: 2005Si30, 2004Sa55, 2003Ad31, 2003Ad34, 2003Ka23, 2003Ok01.

^{239}Pu Levels

Cross Reference (XREF) Flags

A	^{239}Np β^- decay	E	^{243}Cm α decay	I	^{239}Pu(d,d′)
B	Muonic atom	F	^{238}Pu(n,γ) E=th	J	Coulomb excitation
C	^{238}U(α,3nγ)	G	^{238}Pu(d,p)	K	^{239}Pu(γ,γ')
D	^{239}Am ε decay	H	^{239}Pu(n,n′)		

E(level)	J$^{\pi}$[†]	$T_{1/2}$	XREF	Comments
0[a]	1/2$^+$	24110 y *30*	ABCDEFGHIJK	%α=100; %SF=3.1×10^{-10} *6* μ=+0.203 *4* (2011StZZ) Quadrupole deformation parameter deduced from splitting of giant-dipole resonance in photoabsorption β(2)= 0.29 *3* (1976Gu15), β(2)=0.245 (1986Be38). From muonic x-rays 1986Zu01 deduce β(2)= 0.2607 *7*, β(4)= 0.0896 *18* and Q= 11.56 *6*. 1978Cl03 deduce Q= 11.66 *11*. From optical isotope shifts 1985Ge08 deduce Q= 11.3 *10*. J$^{\pi}$: Atomic beam (1969Fu11). 285γ E2 from 5/2$^+$ at 285.4 keV. $T_{1/2}$: from 1986LoZT. 1990GlZZ recommend 24113 y *40* with a confidence level of >99% (the standard deviation is 11 y). Others: 24060 y *19*, specific α activity (1975Al15); 24048 y *25*, calorimetry, value corrected by 1977Ja08

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Adopted Levels, Gammas (continued)

^{239}Pu Levels (continued)

E(level)	J^{π}[†]	$T_{1/2}$	XREF	Comments
				(1970OeZZ); 24124 y *14*, specific α activity, and 24139 y *14*, mass spectrometry (1977Ja08); 24164 y *14* mass spectrometry (1978Ma45); 24101 y *8* calorimetry (1978Se12); 24019 y *21* specific α activity, and 24089 y *23* mass spectrometry (1978Pr07). $T_{1/2}$: $T_{1/2}$(SF)= 8×10^{15} y *2*, value recommended in 2000Ho27. Other values: $T_{1/2}$(SF)= 7.8×10^{15} y *16* (1985Dr09); $T_{1/2}$(SF)= 5.5×10^{15} y *16* (1952Se67) ($\Delta T_{1/2}$ is due to statistics only).
7.861[@b] *2*	$3/2^+$	36 ps *3*	ABCDEFGH JK	Q=−2.319 *7* (2011StZZ) $T_{1/2}$: from B(E2)=5.313 22 in muonic atom.
57.275[@a] *2*	$5/2^+$	101 ps *5*	ABCDEF HIJ	Q=−3.345 *13* (2011StZZ) $T_{1/2}$: from Moss (1972Ga28). Others: ≈ 0.2 ns from Coul. ex., 102 ps *8* from B(E2)($1/2^+$ to $5/2^+$)= 7.95 *4* in muonic atom and adopted γ branching.
75.705[@b] *3*	$7/2^+$		ABCDEFGHIJ	Q=−3.83 *3* (2011StZZ) $T_{1/2}$: 111 ps from B(E2) ($3/2^+$ to $7/2^+$)= 7.00 *4* in muonic atom and assuming Iγ(67γ)=100%.
163.76[@a] *3*	$9/2^+$	73 ps *4*	ABCDEFGHIJ	$T_{1/2}$: from B(E2)= 6.43 *3* in muonic atom and adopted Iγ branching.
192.8[@b] *10*	$11/2^+$		C E GHIJ	
285.460[@e] *2*	$5/2^+$	1.12 ns *5*	A DE GH	μ=−1.3 *3* (2011StZZ) μ: from β^- decay. J^{π}: favored α decay (HF=1.33) from ^{243}Cm ($J^{\pi}=5/2^+$). $T_{1/2}$: from 1974Pa03. Other: 1951Gr34.
318.5[a] *7*	$13/2^+$[&]		C IJ	
330.124[@e] *4*	$7/2^+$		A DE G	
358.1[b] *1*	$15/2^+$[&]		C IJ	
387.42[@e] *2*	$9/2^+$		A DE G	
391.584[@f] *3*	$7/2^-$	193 ns *4*	A DE	J^{π}: 61.5γ E1 to $7/2^+$, 106.1γ E1(+M2) to $5/2^+$. α decay HF=130 is comparable to HF≈90 for the analogous transition in ^{241}Pu α decay; $\gamma(\theta)$ in ^{239}Np β^- decay. $T_{1/2}$: from 1955En07. Other: 1974Pa03.
434[@f] *3*	$(9/2^-)$		E	
462[@e] *3*	$(11/2^+)$		E G	
469.8[@c] *4*	$(1/2^-)$[#]		A EFG IJ	J^{π}: from (d,d′).
487[@f] *3*	$(11/2^-)$		E G	
492.1[@d] *3*	$3/2^-$		A EFG IJ	
505.6[@c] *2*	$(5/2^-)$		A DEFG IJ	
511.838[g] *13*	$7/2^+$		A D	J^{π}: 124γ M1(+E2) to $9/2^+$, 226γ M1+E2 to $5/2^+$.
519.3[a] *6*	$17/2^+$[&]		C J	
538[@] *3*			E G	
556.2[@d] *5*	$(7/2^-)$		A EF IJ	
565[g]	$(9/2^+)$		G	
570.6[b] *7*	$19/2^+$[&]		C J	
583[c] *3*	$(9/2^-)$		IJ	
620[f]	$(15/2^-)$		G	
634[g]	$11/2^+$		G	
661.1[d] *11*	$(11/2^-)$[&]		G IJ	
698.7[c] *10*	$(13/2^-)$		J	
716			G	
752.5 *5*	$1/2^+$,$3/2$[#]		EFG I	
756[@] *3*			E	

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Adopted Levels, Gammas (continued)

^{239}Pu Levels (continued)

E(level)	Jπ†	XREF
763@ 3		E
764.6a 6	(21/2+)&	C J
779 3		G I
798.2 5	1/2,3/2#	F I
805.1 5	1/2,3/2#	F
806.7d 15	(15/2−)&	J
813@ 3		E
825.5 10	1/2,3/2#	F I
828.0b 7	(23/2+)&	C J
854 2		E I
857.5c 10	(17/2−)	J
888.0 5	1/2,3/2#	FG
900 2		G I
915 3		I
933.3 10	1/2,3/2#	F
948 3		I
990h	(3/2−)	G I
992.4d 18	(19/2−)&	J
1017h	(1/2−)	G
1027 2		I
1038h	(7/2−)	G
1052.9a 3	(25/2+)	C J
1058.1c 11	(21/2−)	J
1062 2		I
1099.9 5	1/2,3/2#	F
1100h	(5/2−)	G
1127.6b 7	(27/2+)&	C J
1137h	(11/2−)	G
1174		G
1214i	(1/2+)	G
1219.7d 21	(23/2−)&	J
1233i	(3/2+)	G
1233j	(9/2−)	G
1261i	(5/2+)	G
1261k	(3/2+)	G
1289k	(5/2+)	G
1300.9c 12	(25/2−)	J
1311i	(7/2+)	G
1342k	(7/2+)	G
1359i	(9/2+)	G
1381.1a 7	(29/2+)&	C J
1390		G
1409k	(9/2+)	G
1437		G
1465		G
1467.3b 8	(31/2+)&	C J
1487.7d 23	(27/2−)&	J
1488		G

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Adopted Levels, Gammas (continued)

^{239}Pu Levels (continued)

E(level)	J^{π}[†]	$T_{1/2}$	XREF	Comments
1584.9[c] *14*	(29/2$^-$)		J	
1748.2[a] *7*	(33/2$^+$)[&]		C J	
1795.5[d] *25*	(31/2$^-$)		J	
1846.3[b] *8*	35/2$^+$[&]		J	
1908.9[c] *15*	(33/2$^-$)		J	
2040.25 *21*	(1/2,3/2)[‡]		K	
2046.9 *3*	(1/2,3/2)[‡]		K	
2135.0 *4*	(1/2,3/2)[‡]		K	
2143.56 *13*	(1/2,3/2)[‡]		K	
2144[d] *3*	(35/2$^-$)[&]		J	
2151.0 *3*	(1/2,3/2)[‡]		K	
2151.8[a] *7*	(37/2$^+$)[&]		J	
2262.0[b] *8*	(39/2$^+$)[&]		J	
2272.0[c] *16*	(37/2$^-$)		J	
2289.0 *3*	(1/2,3/2)[‡]		K	
2431.7 *3*	(1/2,3/2)[‡]		K	
2454.4 *3*	(1/2,3/2)[‡]		K	
2460.5 *4*	(1/2,3/2)[‡]		K	
2464.6 *3*	(1/2,3/2)[‡]		K	
2471.1 *3*	(1/2,3/2)[‡]		K	
2529.4[d] *23*	(39/2$^-$)		J	
2589.4[a] *8*	(41/2$^+$)[&]		J	
2672.0[c] *17*	(41/2$^-$)		J	
2712.8[b] *8*	(43/2$^+$)[&]		J	
2951.4[d] *25*	(43/2$^-$)		J	
3059.7[a] *8*	(45/2$^+$)[&]		J	
31.×10^2[l] *2*	(5/2$^+$)	7.5 μs *10*	K	%SF≤100 Additional information 2. $T_{1/2}$: from 1977GoZH. Others: 8 μs *1* (1970Po01), 9 μs *1* (1973Na35), 8.1 μs *8* (1972Wo07), 11 μs *2* (1979Ba02), 6.5 μs *4* (1980Gu20). See also: 1971Ta17. E(level): from ^{239}Pu(γ,n) (1972Ga04). E= 2.7 MeV from ^{238}U(α,3n) (1971Br38,1972Wo07,1980Bj02). Others: 1970Bu02, 1974Ga41, 1973PoZA. Ratio of isomeric to prompt fission 7.9×10^{-5} in ^{240}Pu(γ,n) E(γ)≤ 45 MeV (1980Gu20). Mass distribution in fission of the isomer studied by 1977GoYZ. Q of rotational band built on g.s. of second potential minimum studied by 1977Ha01. Q= 36.5 *25* assuming moment of inertia for the band 5% lower than the ^{240}Pu case. K≥5/2 from decay time of high-charge states. Other: 1977GoZH.
3108.0[c] *20*	(45/2$^-$)		J	
3124.3[l]	(7/2$^+$)		K	
3156.2[l]	(9/2$^+$)			
3196.1[b] *9*	(47/2$^+$)[&]		J	
3303	(9/2$^-$)	2.6 ns *+40−12*	K	%SF≤100 Assignment: ^{238}U(α,3n), ce-fission coin (1979Ba02). J^{π}: γ-ray deexcitation, Alaga ratios. Calculations suggest 9/2[734]. $T_{1/2}$: from 1979Ba02. Others: 1977Ha01, 1980Gu20, 1977GoZH.

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Adopted Levels, Gammas (continued)

^{239}Pu Levels (continued)

E(level)	Jπ†	XREF	E(level)	Jπ†	XREF
3407[d] 3	(47/2⁻)	J	4080.0[c] 24	(53/2⁻)	J
3558.2[a] 9	(49/2⁺)&	J	4087.1[a] 24	(53/2⁺)	J
3578.0[c] 22	(49/2⁻)	J	4256[b] 3	(55/2⁺)	J
3713.0[b] 24	(51/2⁺)	J	4413[d] 3	55/2⁻	J
3895[d] 3	51/2⁻	J			

† From γ-ray multipolarities, rotational band structure, and systematics of Nilsson orbitals in nearby odd-A nuclei. Individual arguments are given mostly for rotational bandheads. J^π assignments from ^{238}Pu(d,p) are based on angular distributions and cross section fingerprints.

‡ From expected dominance of dipole excitation in ^{239}Pu(γ,γ′).

Fed in ^{238}Pu(n,γ), E=thermal from 1/2⁺, γ-ray deexcitation to 1/2⁺ and 3/2⁺.

@ From ^{243}Cm α decay.

& From Coulomb Excitation.

[a] Band(A): 1/2[631], α=+1/2.

[b] Band(a): 1/2[631], α=−1/2.

[c] Band(B): 1/2[631]×0⁻, α=+1/2 (octupole vibration on g.s.).

[d] Band(b): 1/2[631]×0⁻, α=−1/2 (octupole vibration on g.s.).

[e] Band(C): 5/2[622].

[f] Band(D): 7/2[743].

[g] Band(E): 7/2[624].

[h] Band(F): 1/2[761].

[i] Band(G): 1/2[620].

[j] Band(H): 7/2[613]?

[k] Band(I): 3/2[622]?

[l] Band(J): 5/2[633] in second potential minimum. Rotational parameters A= 3.36 *10* keV, B= 4 *3* eV (1979Ba02). Q and δ suggest that spin and angular momentum for the band are antiparallel, consistent with 5/2[633].

Adopted Levels, Gammas (continued)

γ(^{239}Pu)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[@]	δ	α[†]	Comments
7.861	3/2+	7.860[&] *3*	100[&]	0	1/2+	M1+E2	0.055 *3*	5.7×10^3 *4*	α(M)=4.2×10^3 *3*; α(N+..)=1.49×10^3 *10* α(N)=1.16×10^3 *8*; α(O)=280 *18*; α(P)=48 *3*; α(Q)=1.632 *23* B(M1)(W.u.)=0.220 *24*; B(E2)(W.u.)=3.1×10^3 *5* B(E2)(W.u.) >> RUL. Additional information 3.
57.275	5/2+	49.412[&] *4*	100[&]	7.861	3/2+	M1+E2	0.50 *3*	126 *8*	α(L)=92 *6*; α(M)=24.8 *17*; α(N+..)=8.7 *6* α(N)=6.8 *5*; α(O)=1.62 *11*; α(P)=0.269 *17*; α(Q)=0.00592 *13* B(M1)(W.u.)=0.0075 *16*; B(E2)(W.u.)=2.2×10^2 *5* I_γ: from ^{239}Np β^-. From B(E2) ratios in muonic atom and δ=0.50 Iγ(49.4γ)=66, if Iγ were exactly 85 then δ=0.59 rather than 0.50 *3*.
		57.273[&] *4*	≈30[&]	0	1/2+	E2		222	B(E2)(W.u.)=291 *47* α(L)=161.1 *23*; α(M)=45.0 *7*; α(N+..)=15.73 *22* α(N)=12.36 *18*; α(O)=2.91 *4*; α(P)=0.457 *7*; α(Q)=0.001109 *16*
75.705	7/2+	(18.4 *CA*) 67.841 *7*		57.275 7.861	5/2+ 3/2+	[M1+E2] E2		 98.5	 α(L)=71.5 *10*; α(M)=20.0 *3*; α(N+..)=6.99 *10* α(N)=5.50 *8*; α(O)=1.293 *19*; α(P)=0.204 *3*; α(Q)=0.000543 *8*
163.76	9/2+	88.06[&] *3*	12[&]	75.705	7/2+	M1+E2	0.50	12.26	α(L)=9.07 *13*; α(M)=2.36 *4*; α(N+..)=0.830 *12* α(N)=0.645 *9*; α(O)=0.1563 *22*; α(P)=0.0274 *4*; α(Q)=0.001050 *15* B(M1)(W.u.)=0.00295 *18*; B(E2)(W.u.)=27.7 *17*
		106.47[&] *4*	100[&]	57.275	5/2+	E2		11.80	α(L)=8.56 *12*; α(M)=2.40 *4*; α(N+..)=0.839 *12* α(N)=0.659 *10*; α(O)=0.1553 *22*; α(P)=0.0248 *4*; α(Q)=9.29×10^{-5} *13* B(E2)(W.u.)=4.5×10^2 *3*
192.8	11/2+	117.3[c] *3*	100	75.705	7/2+	E2		7.55 *14*	α(L)=5.48 *10*; α(M)=1.53 *3*; α(N+..)=0.537 *10* α(N)=0.421 *8*; α(O)=0.0994 *19*; α(P)=0.0159 *3*; α(Q)=6.58×10^{-5} *11*
285.460	5/2+	209.753[&] *2*	23.6[&] *7*	75.705	7/2+	M1+E2[e]	0.37[e] *8*	2.93 *13*	α(K)=2.27 *12*; α(L)=0.499 *9*; α(M)=0.1231 *18*; α(N+..)=0.0435 *7* α(N)=0.0335 *5*; α(O)=0.00830 *13*; α(P)=0.00156 *3*; α(Q)=9.3×10^{-5} *5* B(M1)(W.u.)=7.4×10^{-5} *7*; B(E2)(W.u.)=0.07 *3*
		228.183[&] *2*	75.7[&] *21*	57.275	5/2+	M1+E2[e]	0.28[e] *7*	2.41 *9*	α(K)=1.88 *8*; α(L)=0.395 *7*; α(M)=0.0967 *15*; α(N+..)=0.0342 *6* α(N)=0.0263 *4*; α(O)=0.00653 *11*; α(P)=0.001233 *23*; α(Q)=7.7×10^{-5} *3* B(M1)(W.u.)=0.000194 *15*; B(E2)(W.u.)=0.09 *4*
		277.599[&] *2*	100[&] *3*	7.861	3/2+	M1+E2[e]	0.23[e] *10*	1.42 *7*	α(K)=1.12 *6*; α(L)=0.228 *6*; α(M)=0.0555 *13*; α(N+..)=0.0196 *5* α(N)=0.0151 *4*; α(O)=0.00375 *9*; α(P)=0.000711 *19*; α(Q)=4.53×10^{-5} *22*

$^{239}_{94}Pu_{145}$-6

							B(M1)(W.u.)=0.000145 *13*; B(E2)(W.u.)=0.029 *25*
285.460[&] *2*	5.2[&] *1*	0	$1/2^+$	E2		0.247	α(K)=0.0843 *12*; α(L)=0.1190 *17*; α(M)=0.0326 *5*; α(N+..)=0.01145 *16* α(N)=0.00896 *13*; α(O)=0.00213 *3*; α(P)=0.000356 *5*; α(Q)=4.99×10^{-6} *7* B(E2)(W.u.)=0.0262 *15*

Adopted Levels, Gammas (continued)

γ(^{239}Pu) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[@]	δ	α[†]	Comments
318.5	13/2$^+$	125[c]		192.8	11/2$^+$				
		154.3 *4*	100	163.76	9/2$^+$	E2		2.38 *5*	α(K)=0.195 *3*; α(L)=1.59 *3*; α(M)=0.443 *8*; α(N+..)=0.155 *3* α(N)=0.1217 *23*; α(O)=0.0288 *6*; α(P)=0.00465 *9*; α(Q)=2.67×10^{-5} *5* E_γ: From (α,3nγ).
330.124	7/2$^+$	44.663[&] *5*	100[&] *15*	285.460	5/2$^+$	M1+E2	0.20 *3*	86 *8*	α(L)=64 *6*; α(M)=16.2 *17*; α(N+..)=5.7 *6* α(N)=4.4 *5*; α(O)=1.08 *11*; α(P)=0.193 *17*; α(Q)=0.00902 *15*
		166.319[&] *6*	9[&] *2*	163.76	9/2$^+$	M1		6.23	α(K)=4.91 *7*; α(L)=0.986 *14*; α(M)=0.240 *4*; α(N+..)=0.0847 *12* α(N)=0.0652 *10*; α(O)=0.01623 *23*; α(P)=0.00309 *5*; α(Q)=0.000202 *3*
		254.40[&] *3*	85[&] *8*	75.705	7/2$^+$	M1+E2	−0.159 *6*	1.85	α(K)=1.457 *21*; α(L)=0.294 *5*; α(M)=0.0716 *10*; α(N+..)=0.0253 *4* α(N)=0.0195 *3*; α(O)=0.00485 *7*; α(P)=0.000920 *13*; α(Q)=5.93×10^{-5} *9*
		272.87[&] *9*	62[&] *8*	57.275	5/2$^+$	M1+E2	+0.165 *9*	1.518	α(K)=1.198 *18*; α(L)=0.241 *4*; α(M)=0.0588 *9*; α(N+..)=0.0208 *3* α(N)=0.01599 *23*; α(O)=0.00397 *6*; α(P)=0.000754 *11*; α(Q)=4.86×10^{-5} *7*
		322.3[&] *2*	5.4[&] *8*	7.861	3/2$^+$	[E2]		0.1699	α(K)=0.0679 *10*; α(L)=0.0745 *11*; α(M)=0.0203 *3*; α(N+..)=0.00713 *11* α(N)=0.00557 *8*; α(O)=0.001329 *19*; α(P)=0.000224 *4*; α(Q)=3.73×10^{-6} *6*
358.1	15/2$^+$	165.3[c] *3*		192.8	11/2$^+$	E2		1.80	α(K)=0.187 *3*; α(L)=1.169 *19*; α(M)=0.326 *6*; α(N+..)=0.1143 *19* α(N)=0.0896 *15*; α(O)=0.0212 *4*; α(P)=0.00343 *6*; α(Q)=2.16×10^{-5} *4*
387.42	9/2$^+$	57.30[&] *CA*	≈100[&]	330.124	7/2$^+$	M1(+E2)		28.6 *4*	α: For M1.
		101.96[&] *2*	≈8.9[&]	285.460	5/2$^+$	E2		14.42	α(L)=10.46 *15*; α(M)=2.93 *5*; α(N+..)=1.026 *15* α(N)=0.805 *12*; α(O)=0.190 *3*; α(P)=0.0302 *5*; α(Q)=0.0001088 *16*
		311.7[&] *2*	19[&] *2*	75.705	7/2$^+$	(M1+E2)	≤0.2	1.06 *2*	α(K)=0.5 *4*; α(L)=0.13 *5*; α(M)=0.032 *9*; α(N+..)=0.011 *4* α(N)=0.0087 *24*; α(O)=0.0021 *7*; α(P)=0.00039 *14*; α(Q)=1.9×10^{-5} *16*
391.584	7/2$^-$	(4.2[&])	[&]	387.42	9/2$^+$	[E1]			
		61.460[&] *2*	4.8[&] *6*	330.124	7/2$^+$	E1		0.473	α(L)=0.354 *5*; α(M)=0.0881 *13*; α(N+..)=0.0300 *5*

$^{239}_{94}Pu_{145}$-8

Adopted Levels, Gammas (continued)

γ(^{239}Pu) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[@]	δ	α[†]	Comments
									α(N)=0.0236 *4*; α(O)=0.00553 *8*; α(P)=0.000871 *13*; α(Q)=2.87×10^{-5} *4* B(E1)(W.u.)=1.42×10^{-7} *22*
391.584	7/2$^-$	106.125[&] *2*	100[&] *10*	285.460	5/2$^+$	E1(+M2)	−0.007 *7*	0.117 *11*	α(L)exp=0.19 *3*; α(M)exp=0.050 *8*; α(N+...)exp=0.017 *3* α(L)=0.088 *8*; α(M)=0.0216 *21*; α(N+..)=0.0074 *8* α(N)=0.0058 *6*; α(O)=0.00139 *15*; α(P)=0.00023 *3*; α(Q)=9.4×10^{-6} *15* B(E1)(W.u.)=5.7×10^{-7} *8*; B(M2)(W.u.)=0.011 *+23−11* Mult.: conversion is anomalous.
		315.880[&] *3*	5.8[&] *6*	75.705	7/2$^+$	E1(+M2)	+0.008 *8*	0.0372 *9*	α(K)=0.0294 *6*; α(L)=0.00583 *16*; α(M)=0.00141 *4*; α(N+..)=0.000493 *15* α(N)=0.000382 *12*; α(O)=9.3×10^{-5} *3*; α(P)=1.69×10^{-5} *6*; α(Q)=8.9×10^{-7} *3* B(E1)(W.u.)=1.26×10^{-9} *17*; B(M2)(W.u.)=4.E−6 *+8−4*
		334.310[&] *3*	7.7[&] *6*	57.275	5/2$^+$	E1(+M2)	+0.006 *4*	0.0329	α(K)=0.0261 *4*; α(L)=0.00511 *8*; α(M)=0.001238 *20*; α(N+..)=0.000432 *7* α(N)=0.000334 *6*; α(O)=8.18×10^{-5} *14*; α(P)=1.484×10^{-5} *25*; α(Q)=7.91×10^{-7} *14* B(E1)(W.u.)=1.41×10^{-9} *17*; B(M2)(W.u.)=2.1×10^{-6} *+28−21*
469.8	(1/2$^-$)	461.9[a] *5*	100[a]	7.861	3/2$^+$	[E1]		0.01684	α(K)=0.01350 *20*; α(L)=0.00252 *4*; α(M)=0.000608 *9*; α(N+..)=0.000213 *3* α(N)=0.0001643 *24*; α(O)=4.04×10^{-5} *6*; α(P)=7.42×10^{-6} *11*; α(Q)=4.20×10^{-7} *6*
		469.8[a] *5*	69[a]	0	1/2$^+$	[E1]		0.01628	α(K)=0.01306 *19*; α(L)=0.00244 *4*; α(M)=0.000586 *9*; α(N+..)=0.000205 *3* α(N)=0.0001586 *23*; α(O)=3.90×10^{-5} *6*; α(P)=7.16×10^{-6} *11*; α(Q)=4.07×10^{-7} *6*
492.1	3/2$^-$	434.7[a] *5*	100[a]	57.275	5/2$^+$	E1(+M2)	−0.002 *2*	0.0190	α(K)=0.01522 *22*; α(L)=0.00287 *4*; α(M)=0.000692 *10*; α(N+..)=0.000242 *4* α(N)=0.000187 *3*; α(O)=4.59×10^{-5} *7*; α(P)=8.41×10^{-6} *12*; α(Q)=4.72×10^{-7} *7*
		484.3[a] *5*	8[a]	7.861	3/2$^+$	[E1]		0.01533	α(K)=0.01231 *18*; α(L)=0.00229 *4*; α(M)=0.000550 *8*; α(N+..)=0.000192 *3* α(N)=0.0001488 *21*; α(O)=3.66×10^{-5} *6*; α(P)=6.73×10^{-6} *10*; α(Q)=3.85×10^{-7} *6*
		492.3[a] *5*	46[a]	0	1/2$^+$	[E1]		0.01485	α(K)=0.01192 *17*; α(L)=0.00221 *4*; α(M)=0.000532 *8*; α(N+..)=0.000186 *3* α(N)=0.0001438 *21*; α(O)=3.54×10^{-5} *5*; α(P)=6.51×10^{-6} *10*; α(Q)=3.73×10^{-7} *6*
505.6	(5/2$^-$)	430.0[b] *3*	100[b] *18*	75.705	7/2$^+$				
		448.3[b] *5*	≈7[b]	57.275	5/2$^+$				

$^{239}_{94}Pu_{145}$-9

Adopted Levels, Gammas (continued)

γ(^{239}Pu) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[@]	δ	α[†]	Comments
505.6	(5/2⁻)	497.8[b] *3*	88[b] *18*	7.861	3/2⁺				
511.838	7/2⁺	124.416[b] *15*	3.0[b] *3*	387.42	9/2⁺	M1(+E2)	<0.26	13.8 *4*	α(K)=10.7 *4*; α(L)=2.32 *7*; α(M)=0.570 *22*; α(N+..)=0.201 *8* α(N)=0.155 *6*; α(O)=0.0385 *14*; α(P)=0.00725 *19*; α(Q)=0.000451 *15*
		181.715[b] *10*	33[b] *2*	330.124	7/2⁺	M1+E2	−0.150 *7*	4.77	α(K)=3.75 *6*; α(L)=0.766 *11*; α(M)=0.187 *3*; α(N+..)=0.0661 *10* α(N)=0.0509 *8*; α(O)=0.01265 *18*; α(P)=0.00240 *4*; α(Q)=0.0001537 *22*
		226.383[b] *12*	100[b] *6*	285.460	5/2⁺	M1+E2	+0.133 *6*	2.58	α(K)=2.03 *3*; α(L)=0.410 *6*; α(M)=0.0998 *14*; α(N+..)=0.0353 *5* α(N)=0.0272 *4*; α(O)=0.00675 *10*; α(P)=0.001282 *18*; α(Q)=8.28×10^{-5} *12*
		436.0[b] *3*	0.24[b] *3*	75.705	7/2⁺	[M1]		0.428	α(K)=0.339 *5*; α(L)=0.0669 *10*; α(M)=0.01623 *23*; α(N+..)=0.00573 *8* α(N)=0.00441 *7*; α(O)=0.001098 *16*; α(P)=0.000209 *3*; α(Q)=1.361×10^{-5} *20*
		454.6[b] *3*	0.36[b] *4*	57.275	5/2⁺	[M1]		0.382	α(K)=0.303 *5*; α(L)=0.0597 *9*; α(M)=0.01447 *21*; α(N+..)=0.00511 *8* α(N)=0.00394 *6*; α(O)=0.000979 *14*; α(P)=0.000186 *3*; α(Q)=1.214×10^{-5} *18*
		504.0[b] *3*	0.42[b] *4*	7.861	3/2⁺	[E2]		0.0516	α(K)=0.0304 *5*; α(L)=0.01561 *22*; α(M)=0.00413 *6*; α(N+..)=0.001451 *21* α(N)=0.001130 *16*; α(O)=0.000272 *4*; α(P)=4.75×10^{-5} *7*; α(Q)=1.387×10^{-6} *20*
519.3	17/2⁺	160[c]		358.1	15/2⁺				
		201.0[c] *2*	100	318.5	13/2⁺	E2		0.839	α(K)=0.1493 *21*; α(L)=0.501 *8*; α(M)=0.1392 *21*; α(N+..)=0.0488 *8* α(N)=0.0383 *6*; α(O)=0.00906 *14*; α(P)=0.001482 *22*; α(Q)=1.234×10^{-5} *18*
556.2	(7/2⁻)	392.4[a] *5*	100[a]	163.76	9/2⁺	[E1]		0.0234	α(K)=0.0187 *3*; α(L)=0.00357 *5*; α(M)=0.000863 *13*; α(N+..)=0.000301 *5* α(N)=0.000233 *4*; α(O)=5.72×10^{-5} *9*; α(P)=1.044×10^{-5} *15*; α(Q)=5.74×10^{-7} *9*
		≈498.7[a]	≈62[a]	57.275	5/2⁺	[E1]		0.01448	α(K)≈0.01163; α(L)≈0.00215; α(M)≈0.000518; α(N+..)≈0.000181 α(N)≈0.0001400; α(O)≈3.44×10^{-5}; α(P)≈6.34×10^{-6}; α(Q)≈3.64×10^{-7}
570.6	19/2⁺	212.0[c] *2*	100	358.1	15/2⁺	E2		0.688	α(K)=0.1382 *20*; α(L)=0.400 *6*; α(M)=0.1109 *17*; α(N+..)=0.0389 *6* α(N)=0.0305 *5*; α(O)=0.00722 *11*; α(P)=0.001185 *18*; α(Q)=1.067×10^{-5} *16*

$^{239}_{94}Pu_{145}$-10

Adopted Levels, Gammas (continued)

γ(^{239}Pu) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[@]	α[†]	Comments
661.1	(11/2⁻)	343[c]		318.5	13/2⁺			
		497[c]		163.76	9/2⁺			
698.7	(13/2⁻)	340		358.1	15/2⁺			
		505		192.8	11/2⁺			
752.5	1/2⁺,3/2	695.6[d]	40[d]	57.275	5/2⁺			
		744.6[d]	80[d]	7.861	3/2⁺			
		752.5[d]	100[d]	0	1/2⁺			
764.6	(21/2⁺)	194[c]		570.6	19/2⁺			
		245.3[c] *2*		519.3	17/2⁺	(E2)	0.409	α(K)=0.1095 *16*; α(L)=0.218 *4*; α(M)=0.0603 *9*; α(N+..)=0.0211 *3* α(N)=0.01655 *24*; α(O)=0.00393 *6*; α(P)=0.000650 *10*; α(Q)=7.28×10^{-6} *11*
798.2	1/2,3/2	790.4[d]	100[d]	7.861	3/2⁺			
		798.2[d]	71[d]	0	1/2⁺			
805.1	1/2,3/2	797.3[d]	100[d]	7.861	3/2⁺			
		805.1[d]	30[d]	0	1/2⁺			
806.7	(15/2⁻)	145.6[c]		661.1	(11/2⁻)	(E2)	3.03	α(K)=0.197 *3*; α(L)=2.05 *3*; α(M)=0.574 *8*; α(N+..)=0.201 *3* α(N)=0.1578 *22*; α(O)=0.0373 *6*; α(P)=0.00601 *9*; α(Q)=3.20×10^{-5} *5*
		287[c]		519.3	17/2⁺			
		488[cg]		318.5	13/2⁺			
825.5	1/2,3/2	817.5[d]	45.5[d]	7.861	3/2⁺			
		825.5[d]	100.0[d]	0	1/2⁺			
828.0	(23/2⁺)	256.9[c] *2*		570.6	19/2⁺	(E2)	0.350	α(K)=0.1012 *15*; α(L)=0.181 *3*; α(M)=0.0499 *8*; α(N+..)=0.0175 *3* α(N)=0.01370 *20*; α(O)=0.00325 *5*; α(P)=0.000540 *8*; α(Q)=6.47×10^{-6} *10*
857.5	(17/2⁻)	159[c]		698.7	(13/2⁻)			
		287[c]		570.6	19/2⁺			
		498[c]		358.1	15/2⁺			
888.0	1/2,3/2	888.4[d]	100[d]	0	1/2⁺			
933.3	1/2,3/2	925.7[d]	25[d]	7.861	3/2⁺			
		933.6[d]	100[d]	0	1/2⁺			
992.4	(19/2⁻)	185.8[c]		806.7	(15/2⁻)	(E2)	1.132	α(K)=0.1657 *24*; α(L)=0.702 *10*; α(M)=0.195 *3*; α(N+..)=0.0685 *10* α(N)=0.0537 *8*; α(O)=0.01271 *18*; α(P)=0.00207 *3*; α(Q)=1.539×10^{-5} *22*
		228[c]		764.6	(21/2⁺)			
1052.9	(25/2⁺)	288.2 *1*	100	764.6	(21/2⁺)	(E2)	0.240	α(K)=0.0829 *12*; α(L)=0.1146 *17*; α(M)=0.0314 *5*; α(N+..)=0.01103 *16* α(N)=0.00863 *13*; α(O)=0.00205 *3*; α(P)=0.000343 *5*; α(Q)=4.87×10^{-6} *7*
1058.1	(21/2⁻)	201		857.5	(17/2⁻)			
		230		828.0	(23/2⁺)			
		487		570.6	19/2⁺			
1127.6	(27/2⁺)	299.5[c] *2*	100	828.0	(23/2⁺)	(E2)	0.213	α(K)=0.0775 *11*; α(L)=0.0987 *14*; α(M)=0.0270 *4*; α(N+..)=0.00948 *14* α(N)=0.00741 *11*; α(O)=0.00176 *3*; α(P)=0.000296 *5*; α(Q)=4.44×10^{-6} *7*
1219.7	(23/2⁻)	166[c]		1052.9	(25/2⁺)			

$^{239}_{94}Pu_{145}$-11

Adopted Levels, Gammas (continued)

γ(^{239}Pu) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[@]	α[†]	Comments
1219.7	(23/2⁻)	227.3[c]		992.4	(19/2⁻)	(E2)	0.534	α(K)=0.1240 *18*; α(L)=0.299 *5*; α(M)=0.0827 *12*; α(N+..)=0.0290 *4* α(N)=0.0227 *4*; α(O)=0.00539 *8*; α(P)=0.000887 *13*; α(Q)=8.86×10^{-6} *13*
		455[c]		764.6	(21/2⁺)			
1300.9	(25/2⁻)	173		1127.6	(27/2⁺)			
		243[c]		1058.1	(21/2⁻)	(E2)	0.423	α(K)=0.1112 *16*; α(L)=0.227 *4*; α(M)=0.0627 *9*; α(N+..)=0.0220 *3* α(N)=0.01721 *24*; α(O)=0.00408 *6*; α(P)=0.000675 *10*; α(Q)=7.45×10^{-6} *11*
		473		828.0	(23/2⁺)			
1381.1	(29/2⁺)	254[c]		1127.6	(27/2⁺)			
		328.5[c] *2*	100	1052.9	(25/2⁺)	[E2]	0.1605	α(K)=0.0657 *10*; α(L)=0.0693 *10*; α(M)=0.0189 *3*; α(N+..)=0.00663 *10* α(N)=0.00518 *8*; α(O)=0.001236 *18*; α(P)=0.000209 *3*; α(Q)=3.57×10^{-6} *5*
1467.3	(31/2⁺)	340.0[c] *2*	100	1127.6	(27/2⁺)	(E2)	0.1451	α(K)=0.0617 *9*; α(L)=0.0610 *9*; α(M)=0.01657 *24*; α(N+..)=0.00582 *9* α(N)=0.00455 *7*; α(O)=0.001085 *16*; α(P)=0.000184 *3*; α(Q)=3.29×10^{-6} *5*
1487.7	(27/2⁻)	268.0[c]	100	1219.7	(23/2⁻)	(E2)	0.304	α(K)=0.0941 *14*; α(L)=0.1527 *22*; α(M)=0.0420 *6*; α(N+..)=0.01474 *21* α(N)=0.01154 *17*; α(O)=0.00274 *4*; α(P)=0.000456 *7*; α(Q)=5.82×10^{-6} *9*
1584.9	(29/2⁻)	283.5[c]	100	1300.9	(25/2⁻)	(E2)	0.253	α(K)=0.0853 *12*; α(L)=0.1222 *18*; α(M)=0.0335 *5*; α(N+..)=0.01177 *17* α(N)=0.00921 *13*; α(O)=0.00219 *3*; α(P)=0.000366 *6*; α(Q)=5.07×10^{-6} *7*
		457		1127.6	(27/2⁺)			
1748.2	(33/2⁺)	281[c]		1467.3	(31/2⁺)			
		367.1[c] *2*	100	1381.1	(29/2⁺)	(E2)	0.1166	α(K)=0.0538 *8*; α(L)=0.0460 *7*; α(M)=0.01245 *18*; α(N+..)=0.00437 *7* α(N)=0.00341 *5*; α(O)=0.000816 *12*; α(P)=0.0001389 *20*; α(Q)=2.76×10^{-6} *4*
1795.5	(31/2⁻)	308[c]		1487.7	(27/2⁻)	(E2)	0.195	α(K)=0.0737 *11*; α(L)=0.0886 *13*; α(M)=0.0242 *4*; α(N+..)=0.00850 *12* α(N)=0.00664 *10*; α(O)=0.001583 *23*; α(P)=0.000266 *4*; α(Q)=4.15×10^{-6} *6*
1846.3	35/2⁺	379.0[c] *2*	100	1467.3	(31/2⁺)	(E2)	0.1067	α(K)=0.0508 *8*; α(L)=0.0410 *6*; α(M)=0.01107 *16*; α(N+..)=0.00389 *6* α(N)=0.00304 *5*; α(O)=0.000726 *11*; α(P)=0.0001239 *18*; α(Q)=2.57×10^{-6} *4*
1908.9	(33/2⁻)	323.9[c]		1584.9	(29/2⁻)	(E2)	0.1674	α(K)=0.0673 *10*; α(L)=0.0731 *11*; α(M)=0.0199 *3*; α(N+..)=0.00700 *10* α(N)=0.00547 *8*; α(O)=0.001304 *19*; α(P)=0.000220 *3*; α(Q)=3.69×10^{-6} *6*
		441		1467.3	(31/2⁺)			
2040.25	(1/2,3/2)	2040.25 *21*	100	0	1/2⁺			
2046.9	(1/2,3/2)	2046.9 *3*	100	0	1/2⁺			
2135.0	(1/2,3/2)	2135.0 *4*	100	0	1/2⁺			
2143.56	(1/2,3/2)	2135.0[g] *4*	31	7.861	3/2⁺			
		2143.56[f] *13*	100	0	1/2⁺			
2144	(35/2⁻)	348[c]		1795.5	(31/2⁻)	(E2)	0.1356	α(K)=0.0592 *9*; α(L)=0.0559 *8*; α(M)=0.01518 *22*; α(N+..)=0.00533 *8* α(N)=0.00416 *6*; α(O)=0.000995 *14*; α(P)=0.0001686 *24*; α(Q)=3.12×10^{-6} *5*
2151.0	(1/2,3/2)	2143.56[f] *13*	100	7.861	3/2⁺			
		2151.0 *3*	39	0	1/2⁺			
2151.8	(37/2⁺)	305[c]		1846.3	35/2⁺			
		403.5[c] *2*	100	1748.2	(33/2⁺)	(E2)	0.0901	α(K)=0.0453 *7*; α(L)=0.0328 *5*; α(M)=0.00883 *13*; α(N+..)=0.00310 *5* α(N)=0.00242 *4*; α(O)=0.000580 *9*; α(P)=9.95×10^{-5} *14*; α(Q)=2.24×10^{-6} *4*
2262.0	(39/2⁺)	415.4[c] *2*	100	1846.3	35/2⁺	(E2)	0.0835	α(K)=0.0430 *6*; α(L)=0.0297 *5*; α(M)=0.00797 *12*; α(N+..)=0.00280 *4* α(N)=0.00218 *3*; α(O)=0.000524 *8*; α(P)=9.00×10^{-5} *13*; α(Q)=2.10×10^{-6} *3*

$^{239}_{94}Pu_{145}$-12

Adopted Levels, Gammas (continued)

γ(^{239}Pu) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[@]	δ	α[†]	$I_{(\gamma+ce)}$	Comments
2272.0	(37/2$^-$)	362.8[c]		1908.9	(33/2$^-$)	(E2)		0.1205		α(K)=0.0549 *8*; α(L)=0.0480 *7*; α(M)=0.01300 *19*; α(N+..)=0.00456 *7* α(N)=0.00356 *5*; α(O)=0.000852 *12*; α(P)=0.0001449 *21*; α(Q)=2.84×10^{-6} *4*
		425		1846.3	35/2$^+$					
2289.0	(1/2,3/2)	2289.02 *25*	100	0	1/2$^+$					
2431.7	(1/2,3/2)	2423.48 *22*	100	7.861	3/2$^+$					
		2431.66 *25*	90	0	1/2$^+$					
2454.4	(1/2,3/2)	2454.4 *3*	100	0	1/2$^+$					
2460.5	(1/2,3/2)	2460.5 *4*	100	0	1/2$^+$					
2464.6	(1/2,3/2)	2464.6 *3*	100	0	1/2$^+$					
2471.1	(1/2,3/2)	2471.1 *3*	100	0	1/2$^+$					
2529.4	(39/2$^-$)	386		2144	(35/2$^-$)					
2589.4	(41/2$^+$)	327[c]		2262.0	(39/2$^+$)					
		437.7[c] *2*	100	2151.8	(37/2$^+$)	(E2)		0.0730		α(K)=0.0392 *6*; α(L)=0.0248 *4*; α(M)=0.00664 *10*; α(N+..)=0.00233 *4* α(N)=0.00182 *3*; α(O)=0.000437 *7*; α(P)=7.54×10^{-5} *11*; α(Q)=1.87×10^{-6} *3*
2672.0	(41/2$^-$)	400		2272.0	(37/2$^-$)					
		409		2262.0	(39/2$^+$)					
2712.8	(43/2$^+$)	450.8[c] *2*	100	2262.0	(39/2$^+$)	(E2)		0.0677		α(K)=0.0371 *6*; α(L)=0.0225 *4*; α(M)=0.00600 *9*; α(N+..)=0.00211 *3* α(N)=0.001642 *24*; α(O)=0.000395 *6*; α(P)=6.83×10^{-5} *10*; α(Q)=1.758×10^{-6} *25*
2951.4	(43/2$^-$)	422		2529.4	(39/2$^-$)					
3059.7	(45/2$^+$)	470.3[c] *2*	100	2589.4	(41/2$^+$)	(E2)		0.0610		α(K)=0.0344 *5*; α(L)=0.0195 *3*; α(M)=0.00519 *8*; α(N+..)=0.00183 *3* α(N)=0.001422 *20*; α(O)=0.000342 *5*; α(P)=5.94×10^{-5} *9*; α(Q)=1.606×10^{-6} *23*
3108.0	(45/2$^-$)	436		2672.0	(41/2$^-$)					
3124.3	(7/2$^+$)	24.3		31.×10^2	(5/2$^+$)	[#]			73[‡] *15*	
3156.2	(9/2$^+$)	31.9		3124.3	(7/2$^+$)	M1+E2[#]	>0.85	2.7×10^3 *11*	55[‡] *10*	ce(L)/(γ+ce)=0.73 *21*; ce(M)/(γ+ce)=0.20 *10*; ce(N+)/(γ+ce)=0.07 *4* ce(N)/(γ+ce)=0.06 *3*; ce(O)/(γ+ce)=0.013 *7*; ce(P)/(γ+ce)=0.0020 *11*; ce(Q)/(γ+ce)=6.E−6 *3*
		56.2		31.×10^2	(5/2$^+$)	E2[#]		243	25[‡] *5*	ce(L)/(γ+ce)=0.723 *8*; ce(M)/(γ+ce)=0.202 *4*; ce(N+)/(γ+ce)=0.0706 *14* ce(N)/(γ+ce)=0.0555 *11*; ce(O)/(γ+ce)=0.0131 *3*; ce(P)/(γ+ce)=0.00205 *4*; ce(Q)/(γ+ce)=4.93×10^{-6} *10*
3196.1	(47/2$^+$)	483.3[c] *4*	100	2712.8	(43/2$^+$)	(E2)		0.0571		α(K)=0.0328 *5*; α(L)=0.0179 *3*; α(M)=0.00474 *7*; α(N+..)=0.001666 *24*

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Adopted Levels, Gammas (continued)

γ(^{239}Pu) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.[@]	α[†]	$I_{(\gamma+ce)}$	Comments
									α(N)=0.001298 *19*; α(O)=0.000312 *5*; α(P)=5.44×10^{-5} *8*; α(Q)=1.515×10^{-6} *22*
3303	(9/2$^-$)	146.6		3156.2	(9/2$^+$)	(E1)[#]	0.211	91[‡] *20*	ce(K)/(γ+ce)=0.1335 *17*; ce(L)/(γ+ce)=0.0307 *5*; ce(M)/(γ+ce)=0.00750 *11*; ce(N+)/(γ+ce)=0.00260 *4* ce(N)/(γ+ce)=0.00202 *3*; ce(O)/(γ+ce)=0.000487 *7*; ce(P)/(γ+ce)=8.41×10^{-5} *12*; ce(Q)/(γ+ce)=3.67×10^{-6} *6* B(E1)(W.u.)≈1.2×10^{-5}
		178.5		3124.3	(7/2$^+$)	(E1)[#]	0.1335	41[‡] *10*	ce(K)/(γ+ce)=0.0913 *12*; ce(L)/(γ+ce)=0.0200 *3*; ce(M)/(γ+ce)=0.00487 *7*; ce(N+)/(γ+ce)=0.001690 *24* ce(N)/(γ+ce)=0.001314 *19*; ce(O)/(γ+ce)=0.000318 *5*; ce(P)/(γ+ce)=5.57×10^{-5} *8*; ce(Q)/(γ+ce)=2.56×10^{-6} *4* B(E1)(W.u.)≈3.2×10^{-6}
		202.8[g]		31.×10^2	(5/2$^+$)	[M2][#]	14.58	4[‡] *2*	ce(K)/(γ+ce)=0.614 *7*; ce(L)/(γ+ce)=0.237 *4*; ce(M)/(γ+ce)=0.0629 *12*; ce(N+)/(γ+ce)=0.0226 *5* ce(N)/(γ+ce)=0.0174 *4*; ce(O)/(γ+ce)=0.00432 *9*; ce(P)/(γ+ce)=0.000799 *16*; ce(Q)/(γ+ce)=4.74×10^{-5} *9* B(M2)(W.u.)≈1.7
3407	(47/2$^-$)	456		2951.4	(43/2$^-$)				
3558.2	(49/2$^+$)	498.5[c] *4*	100	3059.7	(45/2$^+$)	(E2)	0.0530		α(K)=0.0310 *5*; α(L)=0.01616 *23*; α(M)=0.00428 *6*; α(N+..)=0.001504 *22* α(N)=0.001171 *17*; α(O)=0.000282 *4*; α(P)=4.92×10^{-5} *7*; α(Q)=1.420×10^{-6} *20*
3578.0	(49/2$^-$)	470	100	3108.0	(45/2$^-$)				
3713.0	(51/2$^+$)	515	100	3196.1	(47/2$^+$)				
3895	51/2$^-$	488	100	3407	(47/2$^-$)				
4080.0	(53/2$^-$)	502	100	3578.0	(49/2$^-$)				
4087.1	(53/2$^+$)	528	100	3558.2	(49/2$^+$)				
4256	(55/2$^+$)	543	100	3713.0	(51/2$^+$)				
4413	55/2$^-$	518	100	3895	51/2$^-$				

† Additional information 4.
‡ Intensity in second potential minimum (1979Ba02). Other: 1976BeZM.
# From ce data of 1979Ba02, L12/L3 ratios.
@ Based on ^{239}Np β^- decay and ^{243}Cm α decay (1991Sh06).
& From ^{243}Cm α decay.
a From ^{239}Np β^- Decay.
b From ^{239}Am ε Decay.
c From Coulomb Excitation.

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$\gamma(^{239}Pu)$ (continued)

[d] From $^{238}Pu(n,\gamma)$ E=th.
[e] From conversion electron data in ^{243}Cm α decay.
[f] Multiply placed.
[g] Placement of transition in the level scheme is uncertain.

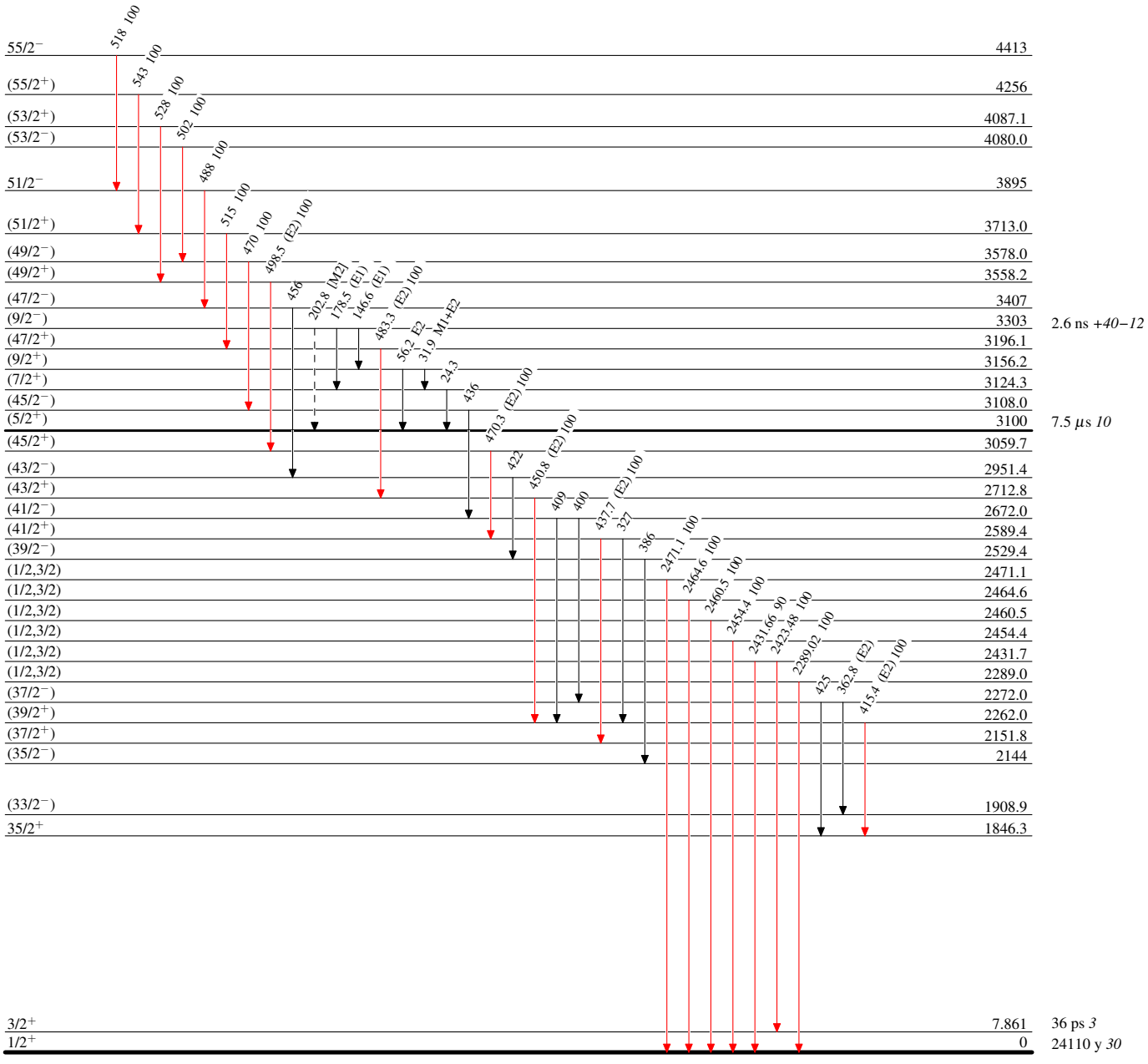
Adopted Levels, Gammas

Level Scheme

Intensities: Type not specified

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)

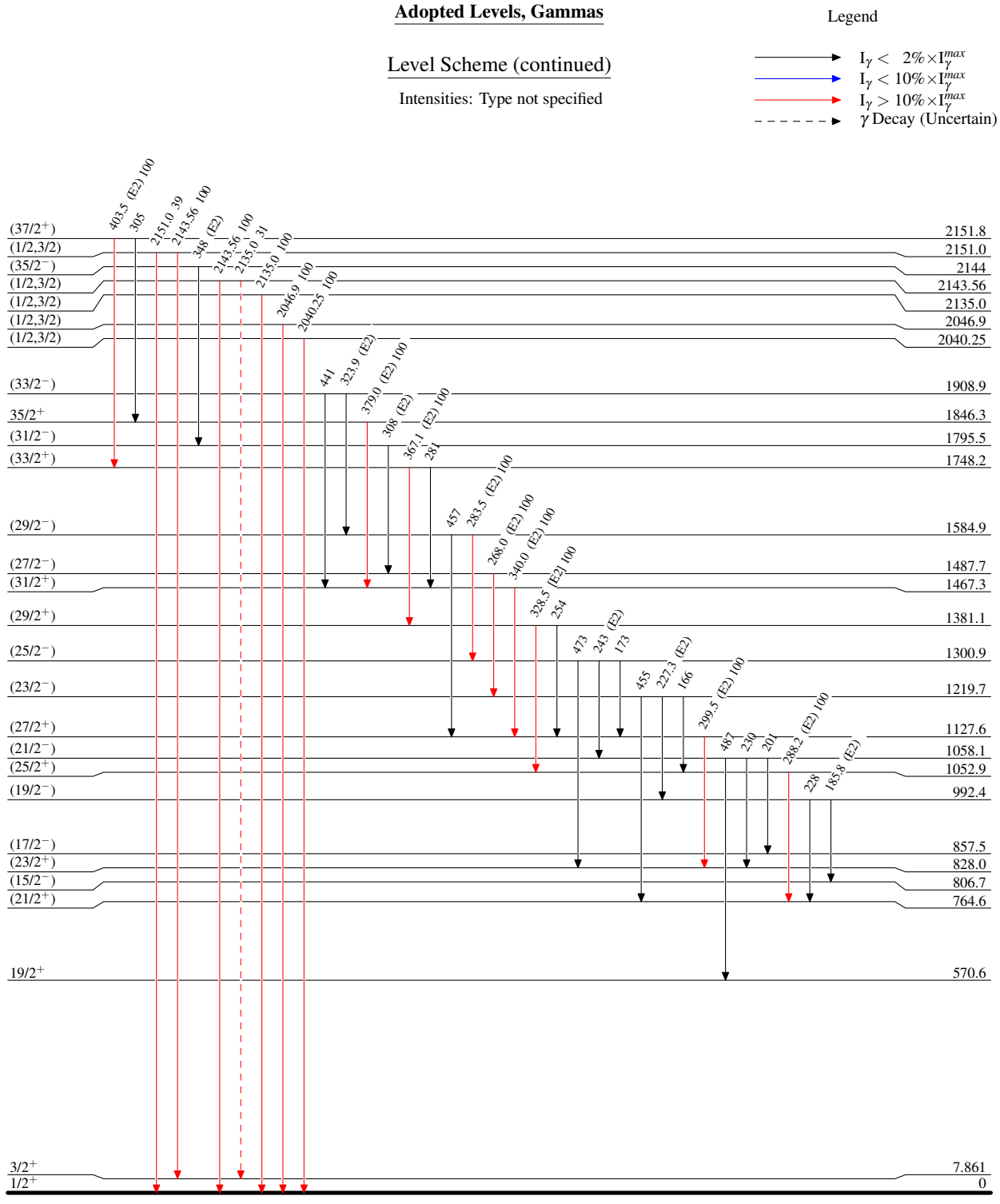


$^{239}_{94}Pu_{145}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified

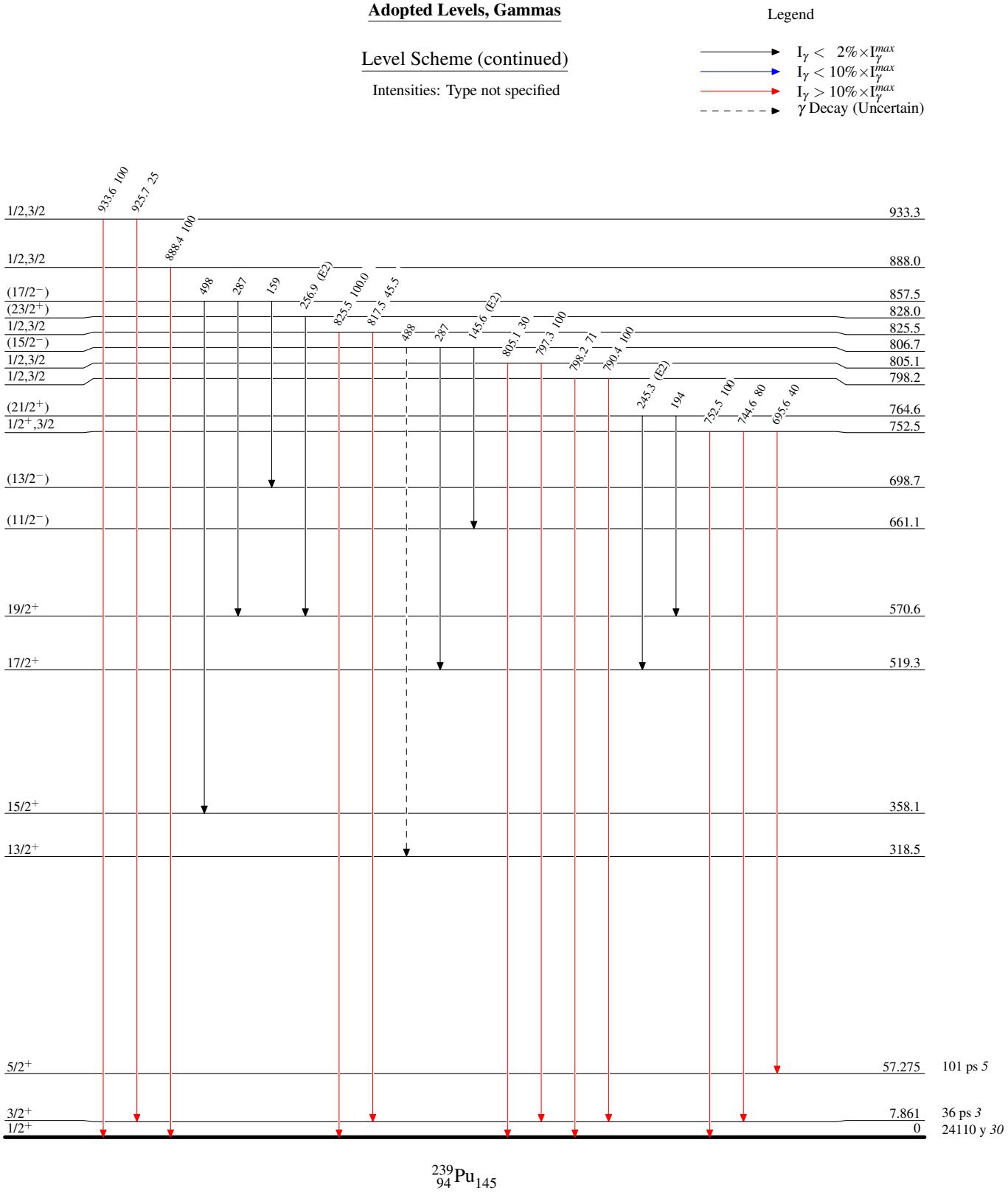


$^{239}_{94}Pu_{145}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified

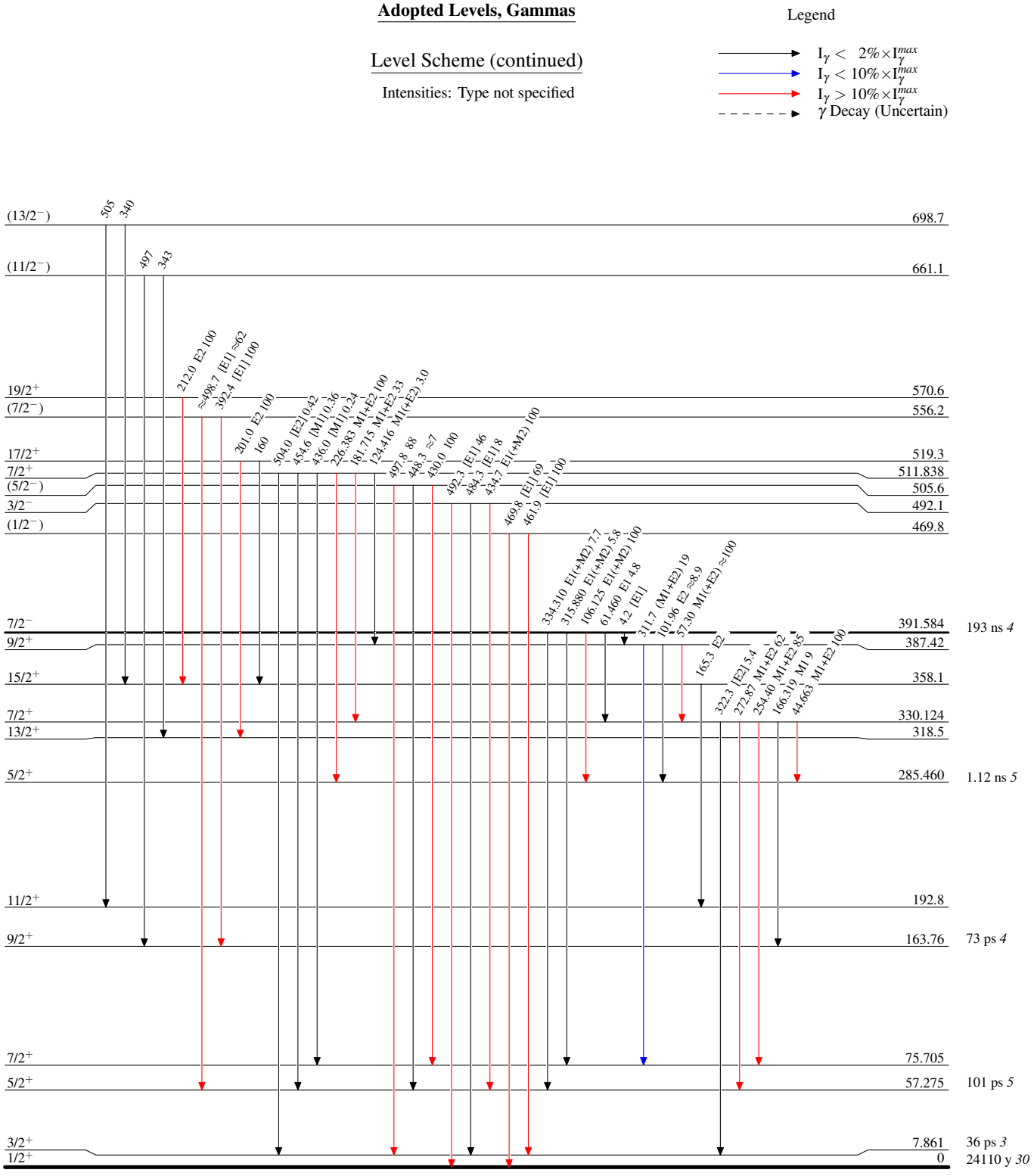


$^{239}_{94}Pu_{145}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified

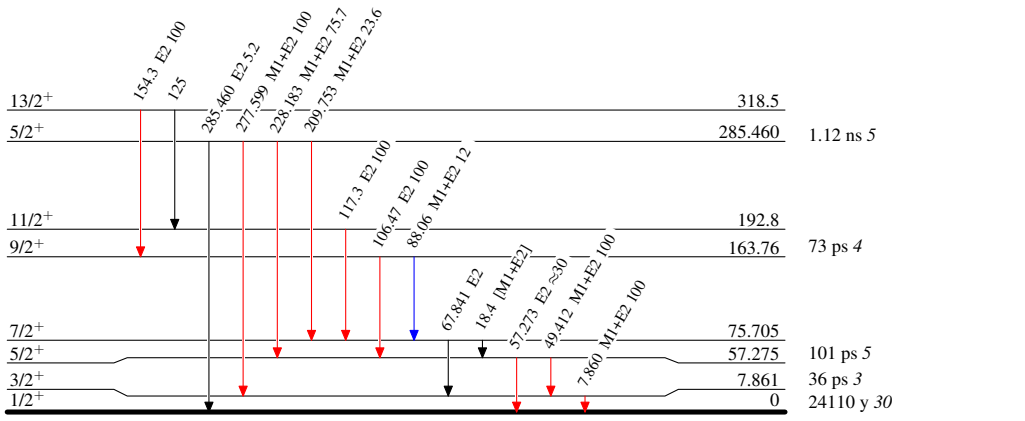


$^{239}_{94}Pu_{145}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified



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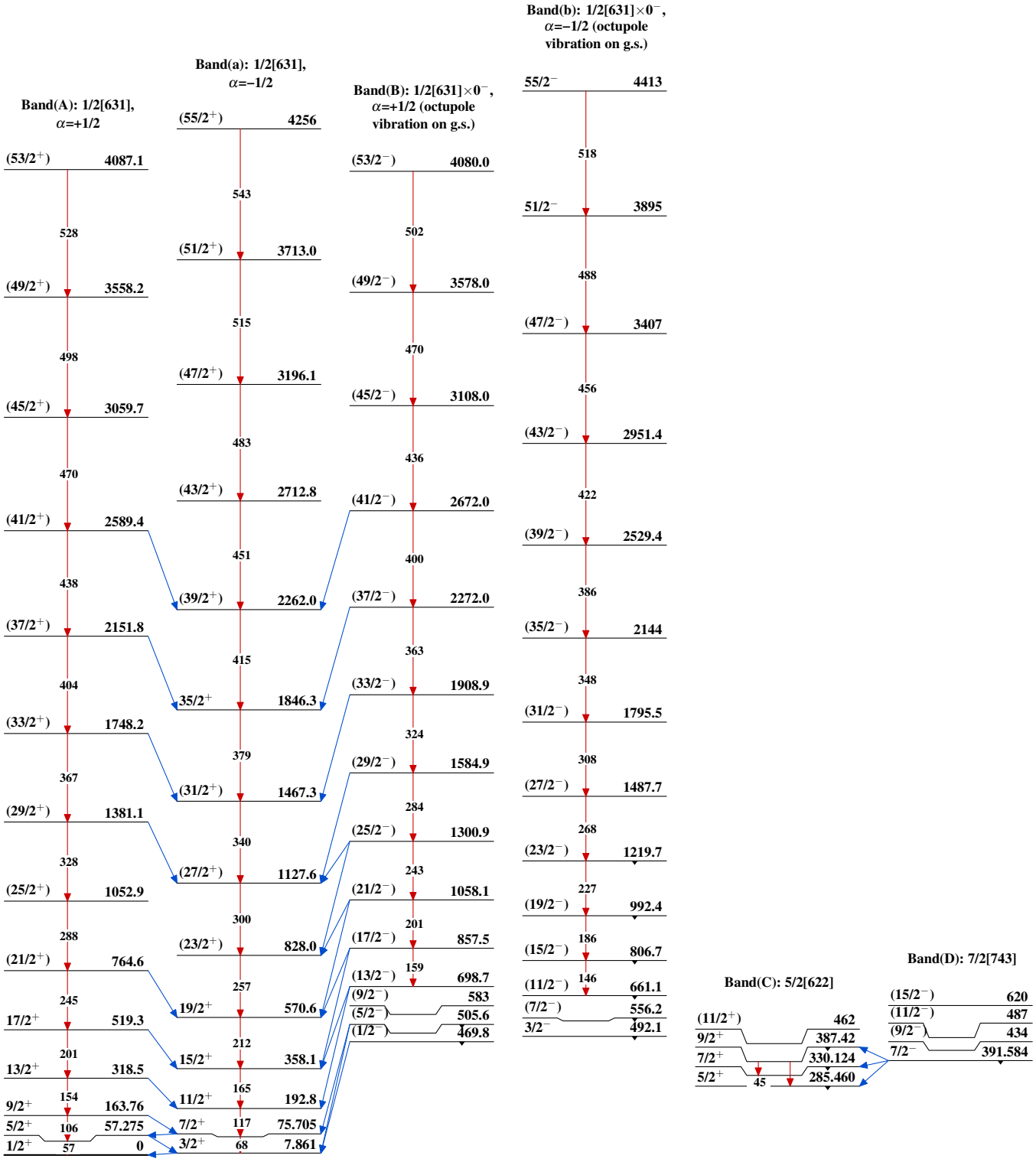
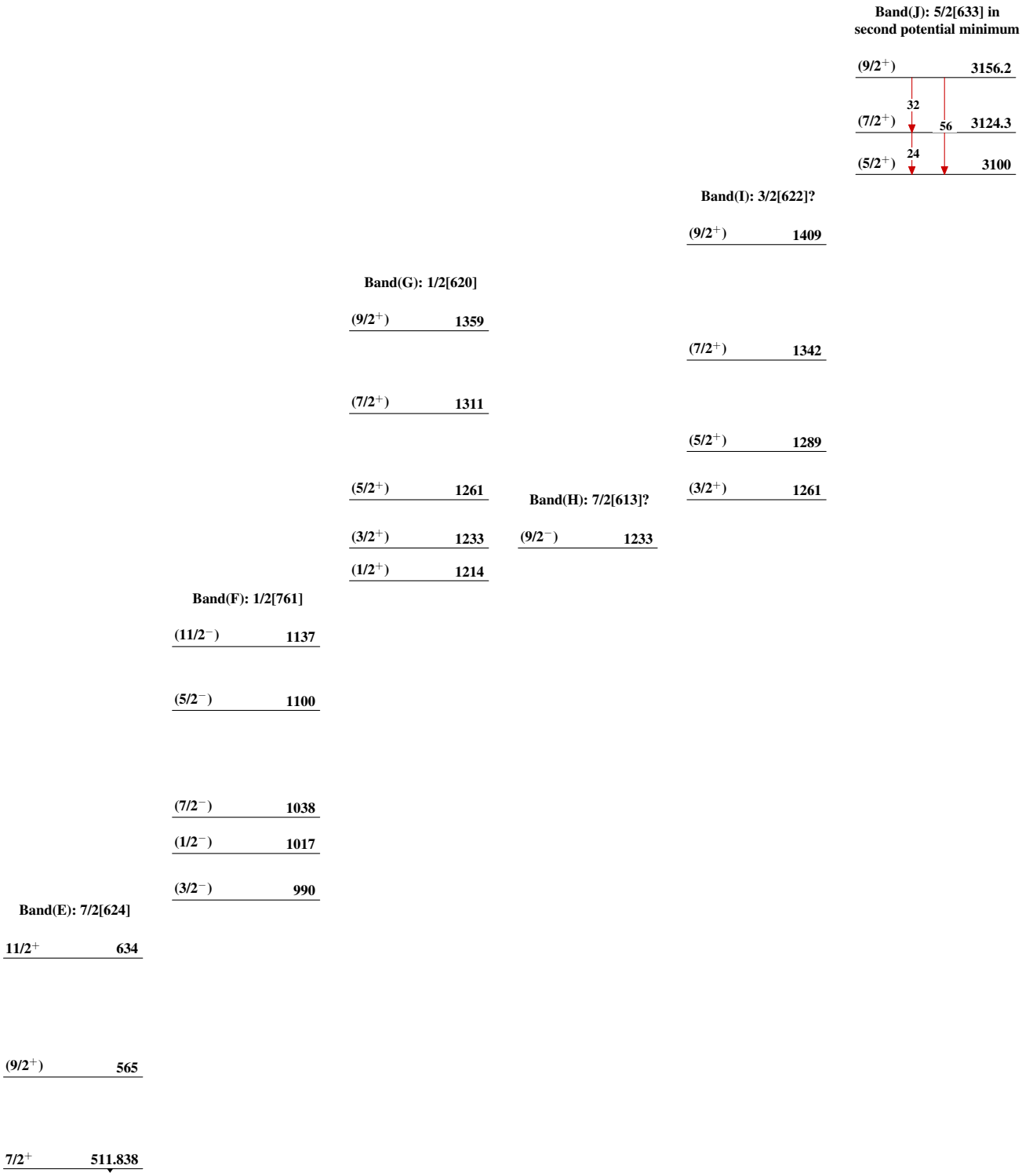
Adopted Levels, Gammas



Adopted Levels, Gammas (continued)



$^{239}_{94}Pu_{145}$