Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 194,460 (2024)	31-Oct-2022

Q(β^-)=−3850 *40*; S(n)=7350 *30*; S(p)=5680 *40*; Q(α)=2481 *28* 2021Wa16
Q(ε)=2635 *27*, S(2n)=17140 *30*, S(2p)=9706 *27* (2021Wa16).
Hyperfine structure, isotope shifts: 1982Bu21, 1983Ne13.
Theoretical structure calculations:
2019Gu10: calculated deformation parameters, neutron/proton pairing interaction strength from binding energies and odd-even mass differences, g.s. shape (phase) evolution using axially deformed Nilsson mean-field plus extended pairing model. 1991Hs02: calculated levels, J^π, transition quadrupole moments using extended interacting boson-fermion approximation model.
1985Ch21: calculated levels, J^π, transition strength, γ-branching ratios using core-quasiparticle coupling model with quadrupole-quadrupole plus hexadecapole-hexadecapole interaction.
1983Sh29: analyzed pairing deformation data; deduced residual interaction blocking effect connection using quasiparticle Hamiltonian, and rotating deformed potential.
1982Ch12: calculated transition strengths, multipole mixing ratios using quasiparticle plus rotor model.
1982Ro08: calculated two-, three-quasineutron routhians using cranked shell model.
Additional information 1.

^{165}Yb Levels

Nomenclature for quasi-particle orbitals:
A: ν5/2[642], α=+1/2.
B: ν5/2[642], α=−1/2.
C: ν3/2[651], α=+1/2.
D: ν3/2[651], α=−1/2.
E: ν5/2[523], α=+1/2.
F: ν5/2[523], α=−1/2.

Cross Reference (XREF) Flags

A ^{165}Lu ε decay (10.74 min)
B ^{130}Te(^{40}Ar,5nγ)
C ^{150}Nd(^{20}Ne,5nγ)
D ^{152}Sm(^{17}O,4nγ)

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	XREF	Comments
0.0[&]	5/2$^-$	9.8 min *5*	ABCD	%ε+%β^+=100 μ=+0.477 *8* (1983Ne13,2019StZV) Q=+2.48 *4* (1983Ne13,2021StZZ) The rms charge radius <r^2>$^{1/2}$=5.2399 fm *58* (2013An02 evaluation). Change in mean square radius δ<r^2>(^{176}Yb,^{165}Yb)=−0.8473 fm^2 *3* (2013An02, evaluation). J$^\pi$: spin from atomic beam (1983Ne13), parity from log *ft*=4.7 to 7/2$^-$. μ,Q: collinear fast laser beam spectroscopy (1983Ne13). T$_{1/2}$: weighted average of 9.8 min *8* (1972Ch23), 9.0 min *5* (1968Ta05), 10.5 min *5* (1967Pa04). Others: 1969DeZZ, 1961St05, 1960Ab05. A 75-min activity reported by 1955Ne03 and an 82-min activity reported by 1959Ka08 in Yb isotopes do not belong to ^{165}Yb (1960Ab05), these are most likely associated with ^{164}Yb decay (T$_{1/2}$=75.8 min).
87.524 *40*	7/2$^-$	0.80[#] ns *10*	ABCD	J$^\pi$: M1+E2 γ to 5/2$^-$; 110.0γ D from 9/2$^-$. Possible member of ν5/2[523] band.

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Adopted Levels, Gammas (continued)

^{165}Yb Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	XREF	Comments
120.655[e] *37*	$(3/2)^-$	0.30[#] ns *4*	A	Jπ: 120.6γ M1+E2 to $5/2^-$; M1 γ from $1/2^-$.
126.83[a] *8*	$9/2^+$	300[#] ns *30*	ABCD	%IT=100 Jπ: 39.23γ E1 to $7/2^-$ gives $5/2^+$,$7/2^+$,$9/2^+$; 275γ-83γ(M1+E2) cascade from 484.7, $13/2^-$ rules out $5/2^-$ and $7/2^-$ since it would require mult>=M2 for at least one of 275γ and 78γ which is unlikely. 1974Ri12 in (^{40}Ar,5nγ) assign $9/2^+$ to this level as the bandhead based on similarity of transitions in this band to those in the yrast cascade of ^{161}Er with $9/2^+$ for the bandhead.
132.527[b] *44*	$7/2^+$	2.8[#] ns *5*	AB	Jπ: 132.49γ E1 to $5/2^-$ gives $3/2^+$,$5/2^+$,$7/2^+$; 275γ-78γ cascade from 484.7, $13/2^-$ rules out $3/2^-$ and $5/2^-$ since it would require mult>=M2 for at least one of 275γ and 78γ which is unlikely.
174.244[e] *36*	$(5/2)^-$	0.23[#] ns *4*	A	Jπ: M1+E2 γ to $7/2^-$; (M1) γ to $(3/2)^-$.
197.56[&] *13*	$9/2^-$	0.179[@] ns *5*	BCD	Jπ: 197.4γ ΔJ=2, E2 to $5/2^-$; rotational band member.
209.93[b] *13*	$11/2^+$	1.5[@] ns *2*	BCD	Jπ: 83.0γ M1+E2 to $9/2^+$, 275γ from $13/2^-$; rotational band member.
217.15[a] *17*	$13/2^+$	1.26[@] ns *15*	BCD	Jπ: 90.2γ E2 to $9/2^+$; rotational band member.
254.65 *5*	$(5/2^+,7/2^-)$		A	Jπ: γs to $7/2^-$, $7/2^+$, $3/2^-$; possible γ to $9/2^+$.
324.37[f] *6*	$(1/2)^-$		A	Jπ: 324.5γ E2 (from ce data) to $5/2^-$; possible band member.
330.6? *10*	$(11/2^-)$		B	
391.70[f] *5*	$(3/2)^-$		A	Jπ: M1(+E2) γs to $(3/2)^-$ and $(5/2)^-$; possible band member.
400.72[f] *7*	$(5/2)^-$		A	Jπ: M1(+E2) γ to $(3/2)^-$, γ to $7/2^-$; possible band member.
419.39[b] *18*	$15/2^+$		BCD	
423.13[a] *21*	$17/2^+$	0.109[@] ns *9*	BCD	
427.64 *6*	$(3/2)^-$		A	Jπ: 253.4γ M1,E2 to $(5/2)^-$; 103.7γ to $(1/2)^-$ is less likely a stretched E2.
483.76 *13*			A	
484.75[&] *17*	$13/2^-$		BCD	Jπ: 287.0γ Q, ΔJ=2 to $9/2^-$; rotational band member.
493.61 *6*	$(3/2,5/2)^+$		A	Jπ: E1 γ to $(3/2)^-$; M1,E2 γ to $7/2^+$.
533.13 *10*	$(^+)$		A	Jπ: (E2) γ to $7/2^+$.
591.20 *9*			A	
664.88 *10*			A	
669.74 *19*			A	
726.36 *8*			A	
745.43[a] *25*	$21/2^+$		BCD	
758.40[b] *21*	$19/2^+$		BCD	
762.38 *9*			A	
783.29 *8*			A	
807.28 *9*			A	
850.47[&] *22*	$17/2^-$		BCD	
874.20 *10*			A	
944.61 *10*			A	
948.14 *8*			A	
1013.12 *16*			A	
1174.39[a] *28*	$25/2^+$		BCD	
1211.47[b] *24*	$23/2^+$		BCD	
1281.09[&] *23*	$21/2^-$		BCD	
1361.48 *17*			A	
1559.62 *18*			A	
1692.95? *19*			A	
1697.97[a] *34*	$29/2^+$		BCD	
1718.52 *15*			A	
1734.08 *8*	$(3/2^+)$		A	Jπ: γs to $7/2^+$ and $(3/2)^-$; possible $\varepsilon+\beta^+$ feeding from $1/2^+$.

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Adopted Levels, Gammas (continued)

^{165}Yb Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
1758.71[&] *27*	25/2⁻	BCD	
1760.96[b] *27*	27/2⁺	BCD	
1930.95 *29*		A	
1978.96[c] *40*	(27/2)⁻	BCD	Jπ: ΔJ=1, E1 γ to 25/2⁺; band assignment.
1983.12 *25*		A	
2007.88 *28*		A	
2012.02? *24*		A	
2125.85 *10*	(3/2)	A	Jπ: γs to (1/2)⁻, (5/2)⁻ and 5/2⁺; possible ε+β⁺ feeding from 1/2⁺.
2248.96[&] *31*	29/2⁻	BCD	
2303.54[a] *38*	33/2⁺	BCD	
2390.28[b] *33*	31/2⁺	BCD	
2448.28[c] *37*	(31/2⁻)	BCD	
2726.54[&] *35*	33/2⁻	BCD	
2954.12[c] *39*	(35/2⁻)	BCD	
2978.53[a] *42*	37/2⁺	BCD	
3085.49[b] *38*	35/2⁺	BCD	
3243.24[&] *40*	37/2⁻	BCD	
3325.5[d] *9*	(37/2⁺)	B	
3520.23[c] *43*	(39/2⁻)	BCD	
3706.9[a] *6*	41/2⁺	BCD	
3824.04[&] *45*	41/2⁻	BCD	
3834.89[b] *43*	39/2⁺	BCD	
3858.4[d] *7*	(41/2⁺)	BC	
4155.5[c] *5*	(43/2⁻)	BCD	
4435.3[d] *7*	(45/2⁺)	BCD	
4472.9[&] *5*	45/2⁻	BCD	
4538.5[a] *7*	45/2⁺	BC	
4622.9[b] *7*	(43/2⁺)	B	
4861.2[c] *5*	(47/2⁻)	BCD	
5170.2[d] *7*	(49/2⁺)	BCD	
5188.7[&] *5*	49/2⁻	BCD	
5353.9[a] *7*	(49/2⁺)	BC	
5473.9?[b] *12*	(47/2⁺)	B	
5634.4[c] *6*	(51/2⁻)	BCD	
5970.5[&] *6*	53/2⁻	BCD	
5985.3[d] *7*	(53/2⁺)	BC	
6218.2[a] *7*	(53/2⁺)	BC	
6473.1[c] *6*	(55/2⁻)	BC	
6817.5[&] *6*	57/2⁻	BC	
6880.6[d] *7*	(57/2⁺)	BC	
7119.2[a] *7*	(57/2⁺)	B	
7377.1[c] *6*	(59/2⁻)	BC	
7729.9[&] *6*	61/2⁻	BC	
7845.2[d] *8*	(61/2⁺)	BC	XREF: C(?).
8056.2?[a] *13*	(61/2⁺)	B	
8343.8[c] *7*	(63/2⁻)	B	
8704.7[&] *7*	65/2⁻	B	

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Adopted Levels, Gammas (continued)

^{165}Yb Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	XREF
8865.6[d] *8*	(65/2$^+$)	B
9368.2[c] *8*	(67/2$^-$)	B
9734.6[&] *7*	69/2$^-$	B
9923.7[d] *9*	(69/2$^+$)	B
10794.7[&] *9*	73/2$^-$	B
11847.7?[&] *13*	(77/2$^-$)	B

[†] From a least-squares fit to Eγ data.
[‡] J≥11/2 are based on $\gamma(\theta)$, γ-decay pattern expected for the members of rotational bands with J increasing with increasing level energy.
[#] From $\gamma\gamma$(t) in ε decay (1980AdZO).
[@] From ce(t) in ^{154}Sm(^{16}O,5nγ) (1979Ri06) (see dataset: ^{130}Te(^{40}Ar,5nγ)).
[&] Band(A): ν5/2[523] or E, α=+1/2. EAB band crosses this band at $\hbar\omega$≈0.23 MeV in the spin range 29/2-33/2. A=12.1.
[a] Band(B): ν5/2[642] or A, α=+1/2. ABC band crosses this band at $\hbar\omega$≈0.36 MeV in the spin range 41/2-45/2. A=5.4.
[b] Band(b): ν5/2[642] or B, α=−1/2. A=6.1. Since this band is populated weakly at higher spins, no information is available about alignments.
[c] Band(C): FAB, α=−1/2. Band built on F orbital is observed only above the AB alignment.
[d] Band(D): ABC, α=+1/2. Band ABC crosses A at $\hbar\omega$≈0.36 MeV in the spin range 41/2-45/2.
[e] Band(E): ν3/2[521] (?).
[f] Band(F): ν1/2[521] (?). A=12.1, a=0.85.

Adopted Levels, Gammas (continued)

γ(^{165}Yb)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[&]	$I_{(\gamma+ce)}$	Comments
87.524	7/2$^-$	87.54 *6*	100	0.0	5/2$^-$	M1+E2	1.10[@] *+8−7*	5.19 *8*		B(M1)(W.u.)=0.00300 *+49−40*; B(E2)(W.u.)=226 *+37−28*
120.655	(3/2)$^-$	120.60 *6*	100	0.0	5/2$^-$	M1+E2	0.16 *+8−5*	1.97 *3*		B(M1)(W.u.)=0.0137 *19*; B(E2)(W.u.)=12 *+14−6*
126.83	9/2$^+$	39.23 *8*	100	87.524	7/2$^-$	E1		0.802 *12*		B(E1)(W.u.)=6.9×10^{-6} *8*
132.527	7/2$^+$	(5.72)		126.83	9/2$^+$				≈116	$I_{(\gamma+ce)}$: comparable to I(γ+ce)(132.5γ) from γγ in ^{165}Lu ε.
		132.49 *6*	100 *6*	0.0	5/2$^-$	E1		0.1629 *23*		B(E1)(W.u.)=1.5×10^{-5} *+6−4*
174.244	(5/2)$^-$	53.66 *18*	13.0 *15*	120.655	(3/2)$^-$	(M1)		3.40 *6*		B(M1)(W.u.)=0.027 *+7−5*
		86.71 *6*	11.5 *12*	87.524	7/2$^-$	M1		5.09 *7*		B(M1)(W.u.)=0.0057 *+14−10*
		174.25 *6*	100 *5*	0.0	5/2$^-$	M1+E2	0.32 *+45−21*	0.67 *8*		B(M1)(W.u.)=0.0056 *+12−16*; B(E2)(W.u.)=9 *+23−7*
197.56	9/2$^-$	110.0 *2*		87.524	7/2$^-$	D				E_γ: from (^{40}Ar,5nγ).
		197.4 *2*	100 *10*	0.0	5/2$^-$	E2		0.281 *4*		B(E2)(W.u.)=153.2 *44*
										E_γ,I_γ: from (^{40}Ar,5nγ).
										B(E2)(W.u.) for assumed insignificant branching ratio for 110.0γ.
209.93	11/2$^+$	77.8 *2*		132.527	7/2$^+$	(E2)		8.67 *15*		
		83.0 *2*		126.83	9/2$^+$	M1+E2	0.82[@] *4*	6.13 *10*		
217.15	13/2$^+$	90.2 *2*	100	126.83	9/2$^+$	(E2)		4.79 *8*		B(E2)(W.u.)=242 *+33−26*
254.65	(5/2$^+$,7/2$^-$)	80.4 *3*		174.244	(5/2)$^-$					
		121.92 *10*	91 *15*	132.527	7/2$^+$					
		127.52[b] *20*	130 *22*	126.83	9/2$^+$					
		134.10 *16*	100 *22*	120.655	(3/2)$^-$					
		167.07 *10*	54 *9*	87.524	7/2$^-$					
		254.89 *11*	87 *15*	0.0	5/2$^-$					
324.37	(1/2)$^-$	203.68 *6*	100 *7*	120.655	(3/2)$^-$	M1		0.453 *6*		
		324.54 *11*	9.0 *16*	0.0	5/2$^-$	E2		0.0585 *8*		
330.6?	(11/2$^-$)	133[b]	100	197.56	9/2$^-$					
391.70	(3/2)$^-$	67.4[b]		324.37	(1/2)$^-$					
		217.43 *6*	100 *8*	174.244	(5/2)$^-$	M1(+E2)		0.29 *9*		
		271.15 *10*	99 *5*	120.655	(3/2)$^-$	M1(+E2)		0.15 *5*		
		391.76 *10*	17.5 *25*	0.0	5/2$^-$					
400.72	(5/2)$^-$	279.82 *10*	100 *17*	120.655	(3/2)$^-$	M1(+E2)		0.14 *5*		E_γ: level-energy difference=280.15.
		313.78 *12*	86 *14*	87.524	7/2$^-$					E_γ: level-energy difference=313.33.
		400.55[ab] *10*	<570[a]	0.0	5/2$^-$					
419.39	15/2$^+$	202.2 *2*	53 *5*	217.15	13/2$^+$	D				E_γ: weighted average of 202.5 *5* from (^{40}Ar,5nγ) and 202.1 *2* from

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Adopted Levels, Gammas (continued)

γ(^{165}Yb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[&]	Comments
								(^{17}O,4nγ).
								I_γ: weighted average of 51 *5* from (^{40}Ar,5nγ) and 55 *6* from (^{17}O,4nγ).
419.39	15/2$^+$	209.6 *2*	100 *10*	209.93	11/2$^+$	Q		E_γ: from (^{40}Ar,5nγ). Other: 209.5 *2* from (^{17}O,4nγ).
								I_γ: from (^{40}Ar,5nγ). Other: 100 *10* from (^{17}O,4nγ).
423.13	17/2$^+$	205.9 *2*	100	217.15	13/2$^+$	E2	0.244 *4*	B(E2)(W.u.)=210 *+19−16*
								E_γ: weighted average of 205.8 *2* from (^{40}Ar,5nγ) and 206.0 *2* from (^{17}O,4nγ).
427.64	(3/2)$^-$	103.73 *17*	78 *15*	324.37	(1/2)$^-$			
		172.86 *8*	40 *4*	254.65	(5/2$^+$,7/2$^-$)			
		253.43 *7*	100 *9*	174.244	(5/2)$^-$	M1,E2	0.19 *6*	
		340.10 *25*	11.1 *25*	87.524	7/2$^-$			
483.76		356.93 *10*	100	126.83	9/2$^+$			
484.75	13/2$^-$	275.0 *2*	10.2 *14*	209.93	11/2$^+$			E_γ: other: 274.6 *5* from (^{17}O,4nγ).
								I_γ: weighted average of 11.0 *10* from (^{40}Ar,5nγ) and 7.9 *17* from (^{17}O,4nγ).
		287.0 *2*	100 *10*	197.56	9/2$^-$	Q		I_γ: also from (^{17}O,4nγ).
493.61	(3/2,5/2)$^+$	319.46 *10*	14 *2*	174.244	(5/2)$^-$			
		361.07 *10*	100 *4*	132.527	7/2$^+$	M1,E2	0.069 *27*	
		372.97 *10*	44 *2*	120.655	(3/2)$^-$	E1	0.0118 *2*	
533.13	(+)	400.55[a] *10*	100[a] *4*	132.527	7/2$^+$	(E2)	0.0321 *4*	
		412.70 *21*	8.5 *15*	120.655	(3/2)$^-$			
591.20		97.43 *17*	18.6 *24*	493.61	(3/2,5/2)$^+$			
		458.77 *12*	100 *5*	132.527	7/2$^+$			
664.88		532.82 *15*	100 *9*	132.527	7/2$^+$			E_γ: level-energy difference=532.33.
		543.95 *12*	74 *7*	120.655	(3/2)$^-$			
669.74		345.37 *18*	100	324.37	(1/2)$^-$			
726.36		472.04 *17*	26 *4*	254.65	(5/2$^+$,7/2$^-$)			
		552.07 *12*	100 *8*	174.244	(5/2)$^-$			
		605.79 *14*	41 *4*	120.655	(3/2)$^-$			
		638.50 *16*	30 *3*	87.524	7/2$^-$			
745.43	21/2$^+$	322.2 *2*	100	423.13	17/2$^+$	Q		
758.40	19/2$^+$	335.3 *2*	24 *5*	423.13	17/2$^+$	D		E_γ: other: 335.2 *5* from (^{17}O,4nγ).
								I_γ: from (^{17}O,4nγ).
		339.1 *2*	100 *10*	419.39	15/2$^+$	Q		E_γ,I_γ: from (^{17}O,4nγ). Other: Eγ=330.0 *5* from (^{40}Ar,5nγ).
762.38		268.72 *11*	87 *10*	493.61	(3/2,5/2)$^+$			
		629.89 *10*	100 *6*	132.527	7/2$^+$			
783.29		608.98 *10*	100 *6*	174.244	(5/2)$^-$			
		662.72 *11*	77 *4*	120.655	(3/2)$^-$			
807.28		415.80 *17*	17 *4*	391.70	(3/2)$^-$			
		686.54 *10*	100 *5*	120.655	(3/2)$^-$			

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Adopted Levels, Gammas (continued)

γ(^{165}Yb) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.‡	α&	Comments
850.47	17/2$^-$	365.7 *2*	100	484.75	13/2$^-$	Q		I_γ: from (^{20}Ne,5nγ).
		431 *1*	26	419.39	15/2$^+$			I_γ: from (^{20}Ne,5nγ).
874.20		549.80 *20*	61 *10*	324.37	(1/2)$^-$			
		753.55 *10*	100 *7*	120.655	(3/2)$^-$			
944.61		770.33[a] *14*	<103[a]	174.244	(5/2)$^-$			
		811.8 *3*	64 *25*	132.527	7/2$^+$			
		824.06 *15*	100 *9*	120.655	(3/2)$^-$			
948.14		356.93 *10*	100 *17*	591.20		(E2)	0.0444 *6*	
		454.97 *15*	21 *3*	493.61	(3/2,5/2)$^+$			
		623.38 *23*	11 *3*	324.37	(1/2)$^-$			
		815.31 *14*	46 *3*	132.527	7/2$^+$			
		827.61 *25*	19 *3*	120.655	(3/2)$^-$			
		860.5 *3*	14 *3*	87.524	7/2$^-$			
1013.12		519.51 *15*	100	493.61	(3/2,5/2)$^+$			
1174.39	25/2$^+$	429.2 *2*	100	745.43	21/2$^+$	Q		
1211.47	23/2$^+$	453.2 *2*	100 *9*	758.40	19/2$^+$	Q		
		465.7 *2*	21 *2*	745.43	21/2$^+$	D		I_γ: weighted average of 19.1 *18* from (^{40}Ar,5nγ) and 23.5 *24* from (^{17}O,4nγ).
1281.09	21/2$^-$	430.6 *2*	100 *10*	850.47	17/2$^-$	Q		E_γ,I_γ: from (^{17}O,4nγ). Other: Eγ=430.6 *5* from (^{40}Ar,5nγ).
		522.7 *2*	16 *3*	758.40	19/2$^+$			E_γ: from (^{40}Ar,5nγ). Other: 522 *1* from (^{17}O,4nγ). I_γ: from (^{17}O,4nγ).
1361.48		1240.82 *16*	100	120.655	(3/2)$^-$			
1559.62		1427.09 *17*	100	132.527	7/2$^+$			
1692.95?		1572.29 *18*	100	120.655	(3/2)$^-$			
1697.97	29/2$^+$	523.6 *2*	100	1174.39	25/2$^+$	Q		
1718.52		770.33[a] *14*	<250[a]	948.14				
		1127.8 *5*	44 *18*	591.20				
		1291.2 *7*	100 *44*	427.64	(3/2)$^-$			
1734.08	(3/2$^+$)	1306.52 *18*	35 *3*	427.64	(3/2)$^-$			
		1342.4 *3*	12 *3*	391.70	(3/2)$^-$			
		1559.86 *15*	44 *3*	174.244	(5/2)$^-$			
		1601.43 *13*	100 *4*	132.527	7/2$^+$			
		1613.46 *13*	92 *4*	120.655	(3/2)$^-$			
1758.71	25/2$^-$	477.6[a] *2*	<800[a]	1281.09	21/2$^-$	Q		
		547.0 *5*	100 *20*	1211.47	23/2$^+$	D		
1760.96	27/2$^+$	549.3 *2*	100 *9*	1211.47	23/2$^+$	Q		
		586.8 *2*	27 *3*	1174.39	25/2$^+$	D		
1930.95		1606.57 *28*	100	324.37	(1/2)$^-$			
1978.96	(27/2)$^-$	804.4 *5*	100	1174.39	25/2$^+$	E1		E_γ: weighted average of 804.2 *5* from (^{40}Ar,5nγ) and 804.6 *5* from (^{17}O,4nγ). Mult.: from γ(θ) and ce data in (^{17}O,4nγ).

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Adopted Levels, Gammas (continued)

γ(^{165}Yb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	Comments
1983.12		1862.45 *25*	100	120.655	$(3/2)^-$		
2007.88		1887.21 *28*	100	120.655	$(3/2)^-$		
2012.02?		1478.88 *22*	100	533.13	$(^+)$		
2125.85	(3/2)	1461.12 *33*	17 *4*	664.88			
		1632.21 *21*	23 *3*	493.61	$(3/2,5/2)^+$		
		1734.13 *16*	100 *7*	391.70	$(3/2)^-$		
		1801.34 *20*	60 *5*	324.37	$(1/2)^-$		
		1951.88 *36*	12 *2*	174.244	$(5/2)^-$		
		2005.25 *32*	45 *5*	120.655	$(3/2)^-$		
2248.96	$29/2^-$	488.5 *5*	4	1760.96	$27/2^+$		I_γ: from (^{20}Ne,4nγ). Other: 77 *16* from (^{17}O,4nγ).
		490.2 *2*	100	1758.71	$25/2^-$	Q	I_γ: from (^{20}Ne,4nγ). Other: 100 *10* from (^{17}O,4nγ).
2303.54	$33/2^+$	605.5 *2*	100	1697.97	$29/2^+$	Q	
2390.28	$31/2^+$	629.3 *2*	100	1760.96	$27/2^+$	Q	
2448.28	$(31/2^-)$	469.3 *2*	42 *6*	1978.96	$(27/2)^-$	Q	I_γ: weighted average of 40 *4* from (^{40}Ar,5nγ) and 60 *13* from (^{17}O,4nγ).
		750.4 *2*	100 *10*	1697.97	$29/2^+$	D	I_γ: other: 100 *21* from (^{17}O,4nγ).
2726.54	$33/2^-$	336.1 *5*	100	2390.28	$31/2^+$		I_γ: from (^{20}Ne,5nγ).
		477.6[a] *2*	<29×10^2[a]	2248.96	$29/2^-$	Q	I_γ: from (^{20}Ne,5nγ).
2954.12	$(35/2^-)$	505.9 *2*	100 *10*	2448.28	$(31/2^-)$	Q	
		650.5 *2*	100 *10*	2303.54	$33/2^+$	D	
2978.53	$37/2^+$	675.0 *2*	100	2303.54	$33/2^+$	Q	
3085.49	$35/2^+$	695.2 *2*	100	2390.28	$31/2^+$	Q	
3243.24	$37/2^-$	516.7 *2*	100	2726.54	$33/2^-$	Q	
3325.5	$(37/2^+)$	1022 *1*	100	2303.54	$33/2^+$		
3520.23	$(39/2^-)$	541.8 *5*	23 *2*	2978.53	$37/2^+$	D	E_γ: weighted average of 542.0 *5* from (^{40}Ar,5nγ) and 541.5 *5* from (^{17}O,4nγ).
		566.1 *2*	100 *10*	2954.12	$(35/2^-)$	Q	
3706.9	$41/2^+$	728.3[a] *5*	100[a]	2978.53	$37/2^+$	(E2)	E_γ: weighted average of 728.4 *5* from (^{40}Ar,5nγ) and 728.1 *5* from (^{17}O,4nγ).
3824.04	$41/2^-$	580.8 *2*	100	3243.24	$37/2^-$	Q	
3834.89	$39/2^+$	749.4 *2*	100	3085.49	$35/2^+$	Q	
3858.4	$(41/2^+)$	533 *1*		3325.5	$(37/2^+)$		
		880 *1*	100 *20*	2978.53	$37/2^+$		
4155.5	$(43/2^-)$	635.3 *2*	100	3520.23	$(39/2^-)$	Q	
4435.3	$(45/2^+)$	577 *1*	100 *50*	3858.4	$(41/2^+)$	Q	
		728.4[a] *2*	<41×10^2[a]	3706.9	$41/2^+$	(E2)	
4472.9	$45/2^-$	648.9 *2*	100	3824.04	$41/2^-$	Q	
4538.5	$45/2^+$	680 *1*	59 *6*	3858.4	$(41/2^+)$	Q	
		831.6 *2*	100 *10*	3706.9	$41/2^+$	Q	
4622.9	$(43/2^+)$	788.0 *5*	100	3834.89	$39/2^+$		
4861.2	$(47/2^-)$	705.7 *2*	100	4155.5	$(43/2^-)$	Q	
5170.2	$(49/2^+)$	734.9 *2*	100	4435.3	$(45/2^+)$	Q	
5188.7	$49/2^-$	715.7 *2*	100	4472.9	$45/2^-$	Q	
5353.9	$(49/2^+)$	815.4 *2*	100	4538.5	$45/2^+$	(Q)	

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Adopted Levels, Gammas (continued)

γ(^{165}Yb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]
5473.9?	(47/2$^+$)	851 *1*	100	4622.9	(43/2$^+$)	
5634.4	(51/2$^-$)	773.2 *2*	100	4861.2	(47/2$^-$)	Q
5970.5	53/2$^-$	781.8 *2*	100	5188.7	49/2$^-$	Q
5985.3	(53/2$^+$)	815.1 *2*	100	5170.2	(49/2$^+$)	Q
6218.2	(53/2$^+$)	864.3 *2*	100	5353.9	(49/2$^+$)	Q
6473.1	(55/2$^-$)	838.7 *2*	100	5634.4	(51/2$^-$)	Q
6817.5	57/2$^-$	847.0 *2*	100	5970.5	53/2$^-$	
6880.6	(57/2$^+$)	895.3 *2*	100	5985.3	(53/2$^+$)	Q
7119.2	(57/2$^+$)	901.0 *2*	100	6218.2	(53/2$^+$)	Q
7377.1	(59/2$^-$)	904.0 *2*	100	6473.1	(55/2$^-$)	Q
7729.9	61/2$^-$	912.4 *2*	100	6817.5	57/2$^-$	Q
7845.2	(61/2$^+$)	964.6 *2*	100	6880.6	(57/2$^+$)	Q
8056.2?	(61/2$^+$)	937 *1*	100	7119.2	(57/2$^+$)	
8343.8	(63/2$^-$)	966.6 *2*	100	7377.1	(59/2$^-$)	Q
8704.7	65/2$^-$	974.8 *2*	100	7729.9	61/2$^-$	Q
8865.6	(65/2$^+$)	1020.4 *2*	100	7845.2	(61/2$^+$)	Q
9368.2	(67/2$^-$)	1024.4 *5*	100	8343.8	(63/2$^-$)	Q
9734.6	69/2$^-$	1029.9 *2*	100	8704.7	65/2$^-$	Q
9923.7	(69/2$^+$)	1058.1 *5*	100	8865.6	(65/2$^+$)	
10794.7	73/2$^-$	1060.1 *5*	100	9734.6	69/2$^-$	Q
11847.7?	(77/2$^-$)	1053[b]	100	10794.7	73/2$^-$	

[†] From ^{165}Lu ε decay for γ rays from low-spin (J≤9/2) and from ^{130}Te(^{40}Ar,5nγ) for high-spin (J>9/2) states, unless otherwise noted. Data from other high-spin reactions are in overall agreement with those from (^{40}Ar,5nγ), but are less complete and not as precise.

[‡] From ce data in ^{165}Lu ε decay for γ rays from low-spin states and from γ(θ) and/or γγ(θ) data with magnetic/electric nature determined based on measured $T_{1/2}$ in three different high-spin datasets for γ rays from high-spin states, unless otherwise noted. The mult=Q corresponds to ΔJ=2, stretched quadrupole (likely E2) transition and mult=D or D+Q to ΔJ=1 (likely E1, M1 or M1+E2) transition.

[#] From ce data in ^{165}Lu ε decay, unless otherwise stated.

[@] From K/L ratio in ^{130}Te(^{40}Ar,5nγ).

[&] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

[a] Multiply placed with undivided intensity.

[b] Placement of transition in the level scheme is uncertain.

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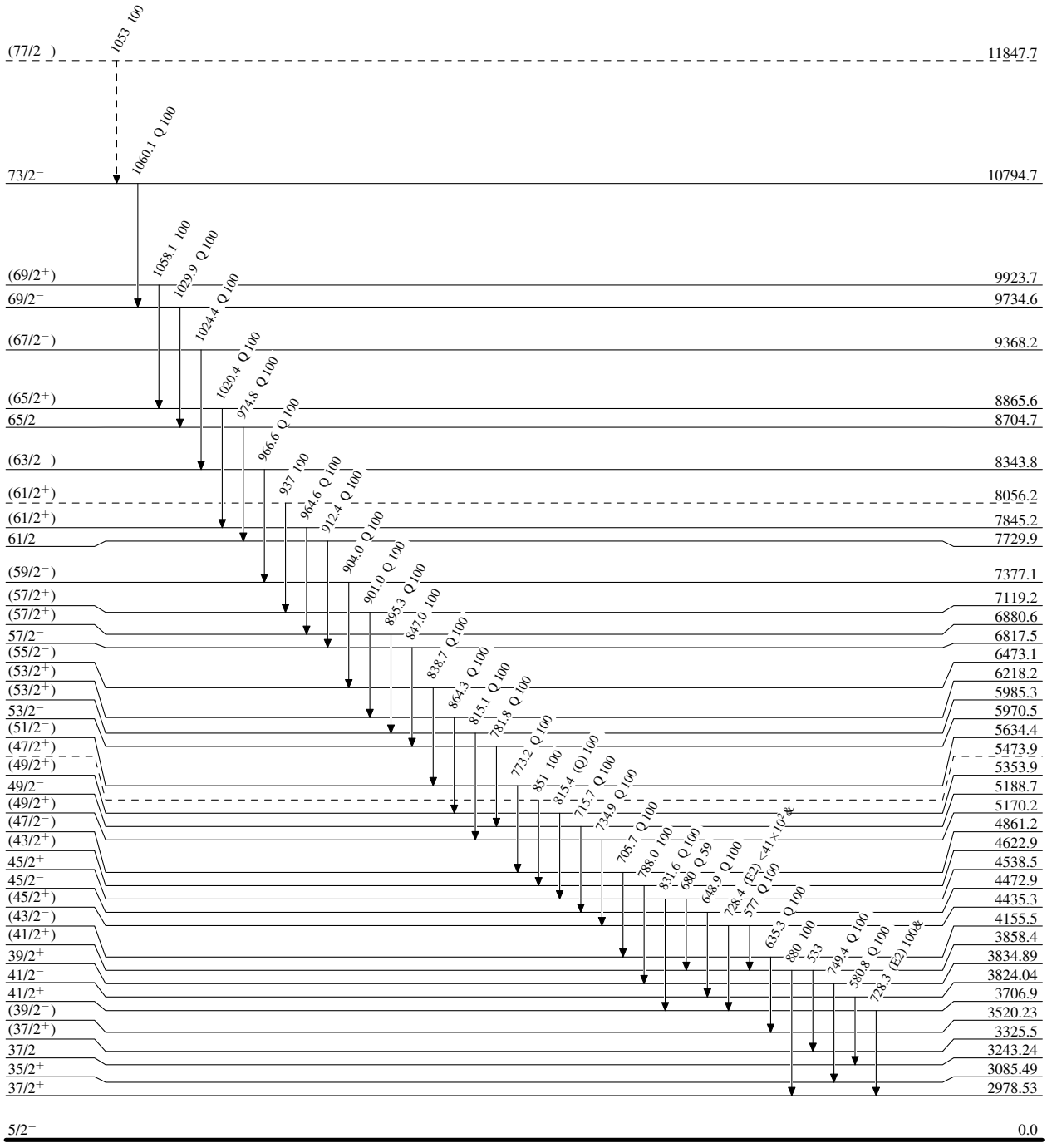
Adopted Levels, Gammas

Legend

Level Scheme

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

γ Decay (Uncertain)

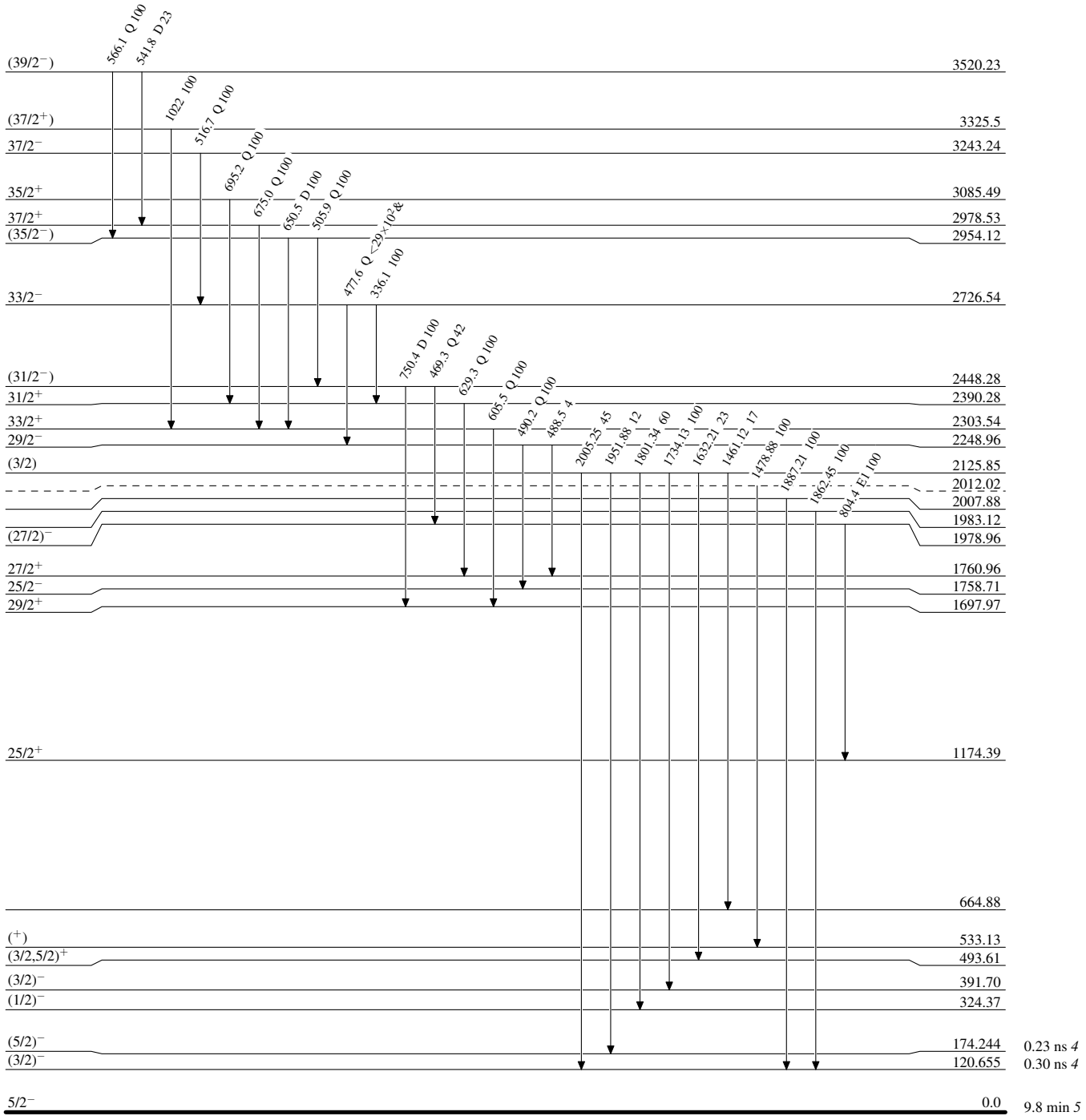


$^{165}_{70}Yb_{95}$

Adopted Levels, Gammas

Level Scheme (continued)

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

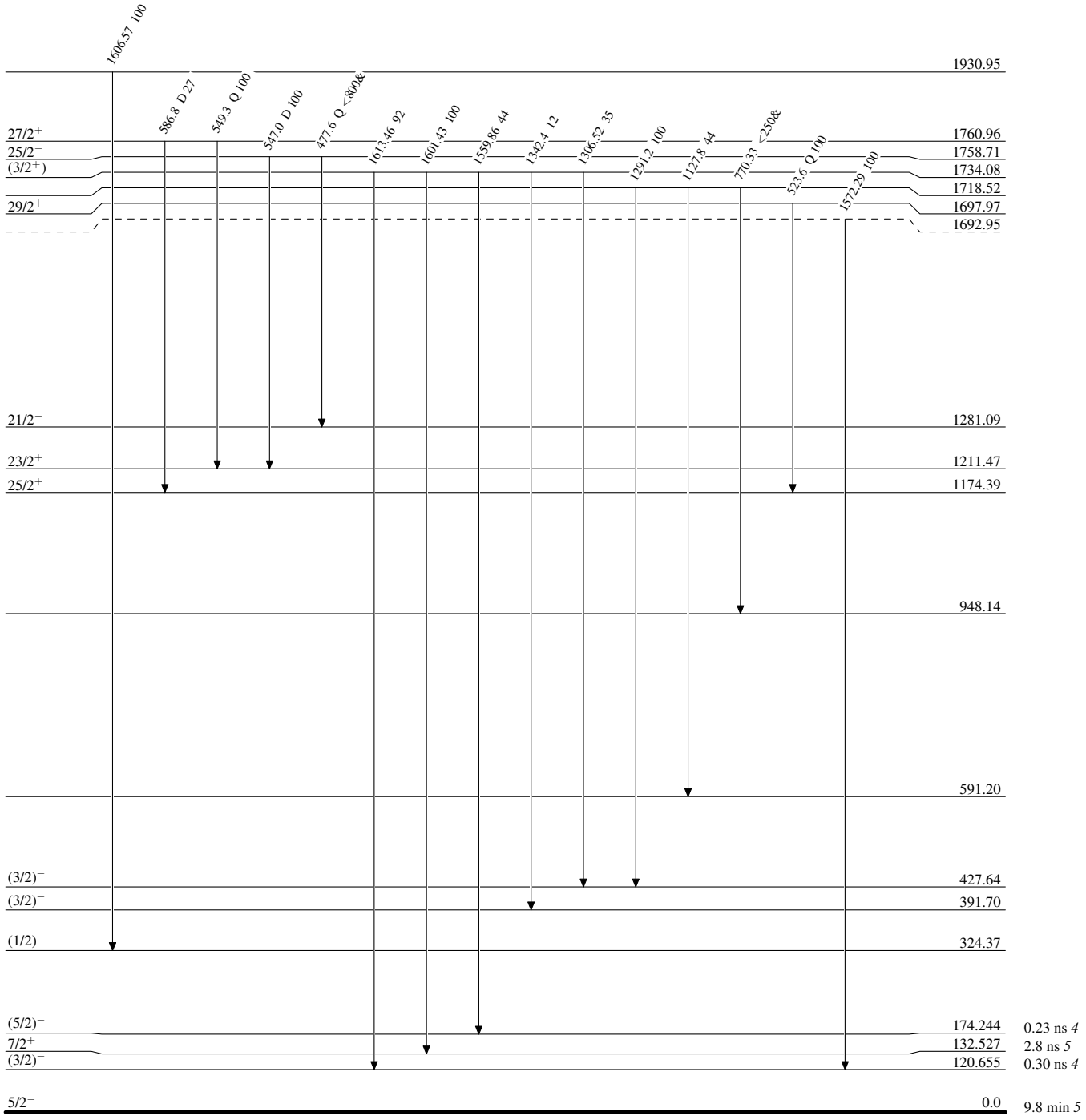


$^{165}_{70}Yb_{95}$

Adopted Levels, Gammas

Level Scheme (continued)

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

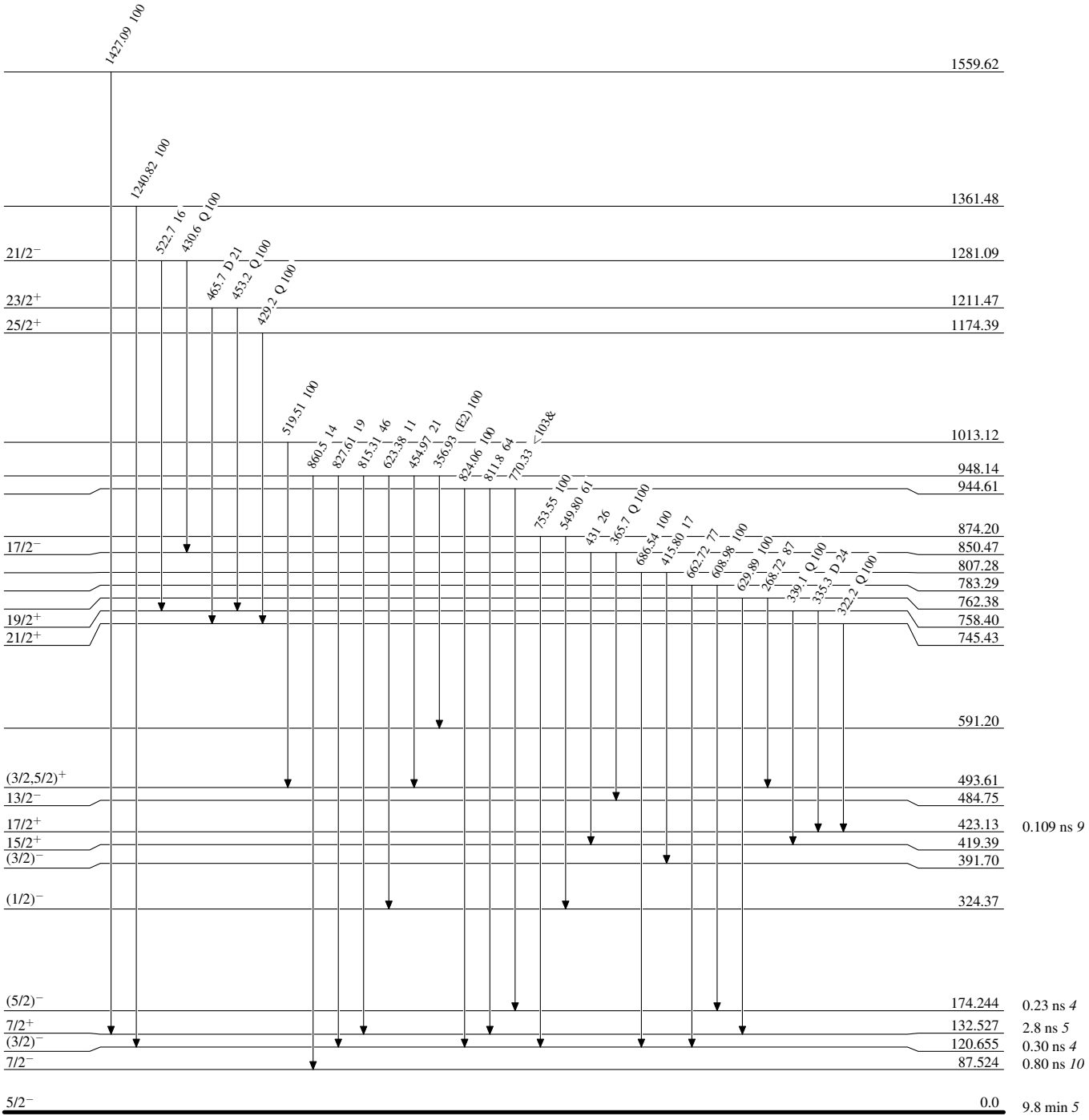


$^{165}_{70}Yb_{95}$

Adopted Levels, Gammas

Level Scheme (continued)

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



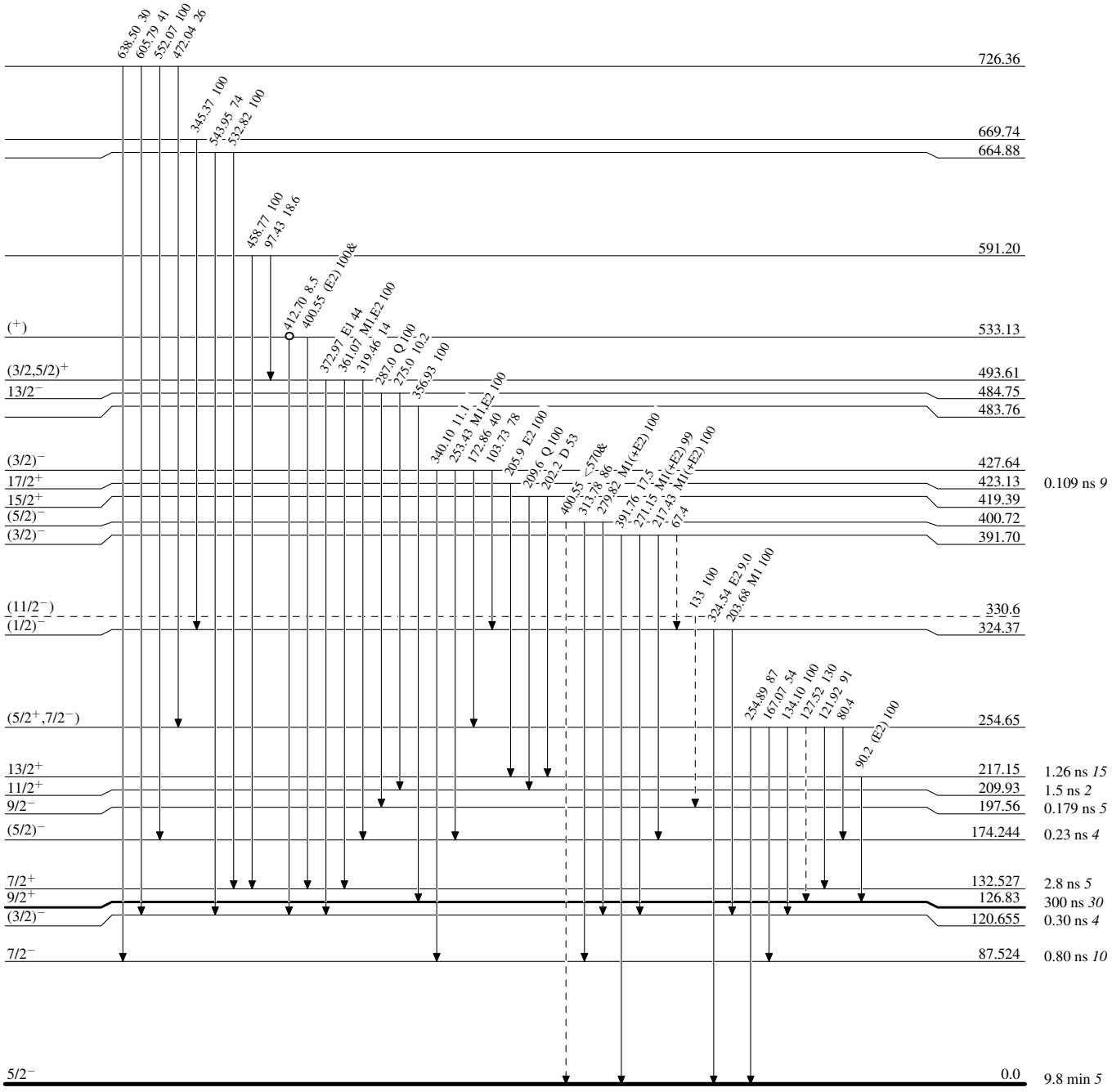
$^{165}_{70}Yb_{95}$

Adopted Levels, Gammas

Level Scheme (continued)

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

Legend
- ------► γ Decay (Uncertain)
- ● Coincidence
- ○ Coincidence (Uncertain)



$^{165}_{70}Yb_{95}$

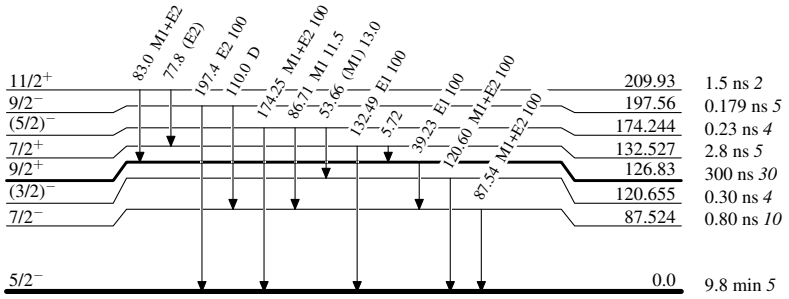
Adopted Levels, Gammas

Legend

Level Scheme (continued)

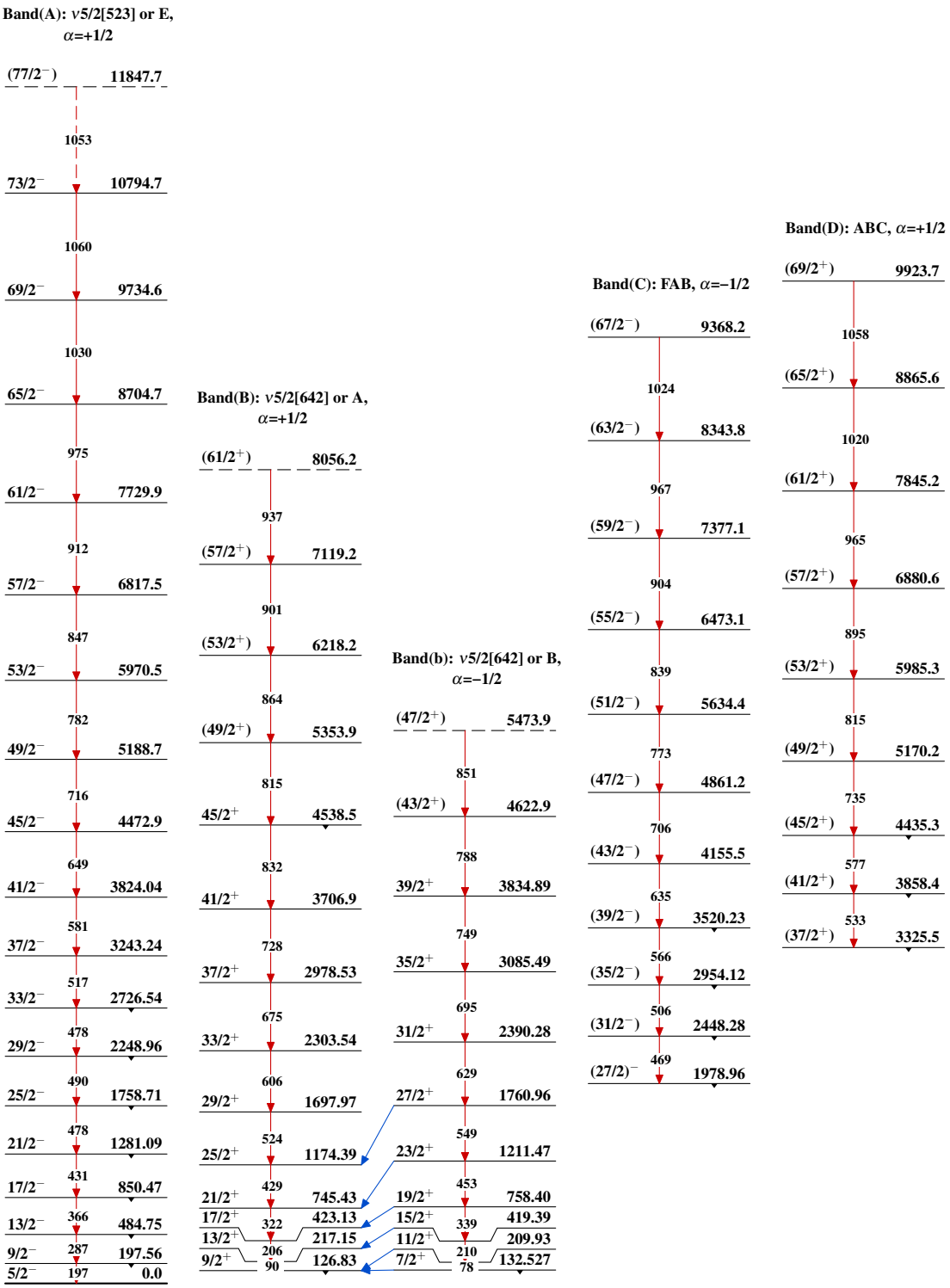
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

– – – – – – ► γ Decay (Uncertain)



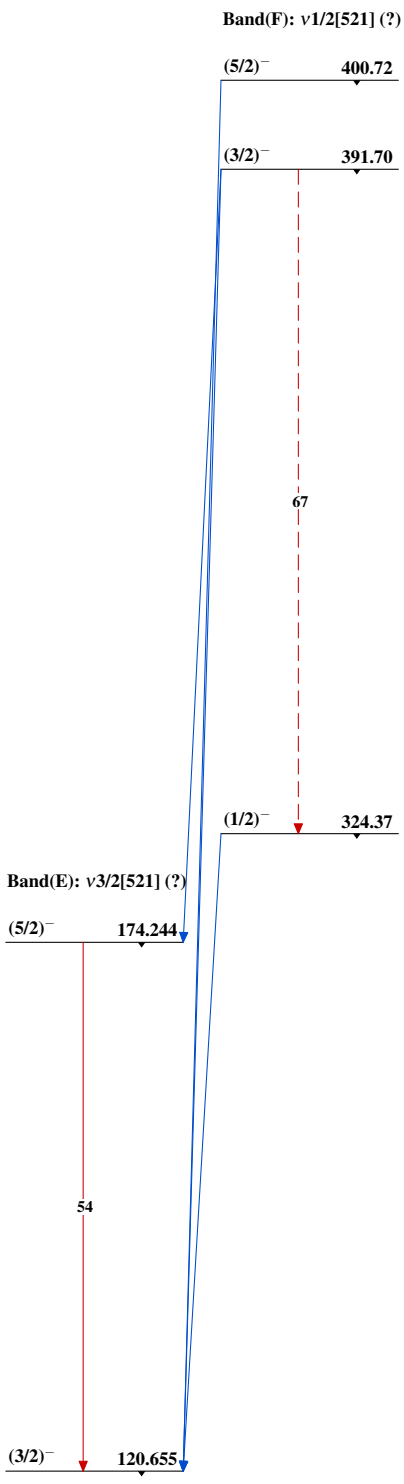
$^{165}_{70}Yb_{95}$

Adopted Levels, Gammas



$^{165}_{70}Yb_{95}$

Adopted Levels, Gammas (continued)



$^{165}_{70}Yb_{95}$