^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. A. Mccutchan	NDS 126, 151 (2015)	1-Feb-2015

2005El10: E(^{11}B)=71 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma(\theta)$(DCO), γ(t) using the CAESAR array consisting of six Compton-suppressed n-type coaxial HPGe detectors and two small-volume unsuppressed planar Ge detectors (LEPS). Measured ce with the Super-e electron spectrometer consisting of a superconducting magnet transporter and a Si(Li) detector with an antipositron baffle. Subset of results given in 2003El11.

1987Kr20: E(^{10}B)=45, 50, 55, 50, 60, 65, 70, and 73 MeV. Measured Eγ, Iγ, $\gamma\gamma$, γ(t), $\gamma(\theta)$ using one Compton-suppressed Ge(Li) detector and an intrinsic Ge detector. Also used the ^{181}Ta(α,5nγ) reaction at E(α)=55 MeV as a cross check of their results.

^{180}Re Levels

The level scheme is that of 2005El10. Most band structures observed in 1987Kr20 are similar to those reported by 2005El10, but differ in bandhead energy and assigned spin. 1987Kr20 report a 46.3-keV level with $T_{1/2}$=66 ns *20*. Such a transition was not observed by 2005El10 or by 1990Ve07 in ^{170}Er(^{14}N,4nγ),^{181}Ta(α,5nγ) and is not included in the Adopted Levels. 1987Kr20 also report a band composed of 191.1γ, 297.8γ, 386.4γ, 465.6γ, and 514.6γ, with no linking transitions to any other levels. This band was not observed by 2005El10 or by 1990Ve07 in ^{170}Er(^{14}N,4nγ),^{181}Ta(α,5nγ) and is not included in the Adopted Levels. 1987Kr20 observed γ-ray transitions consistent with the decay of the $(1)^-$ ground state. They suggest that the (5^+), 0.0+x level observed in reactions studies cascades down through highly converted (and possibly isomeric) low energy transitions.

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$[#]	Comments
0.0	$(1)^-$		E(level),J$^\pi$: from the Adopted Levels.
0.0+x[&]	(5^+)		Additional information 1.
45.8+x[@] *5*	(6^+)		
70.6+x[c] *6*	(7^+)		
123.5+x[&] *6*	(7^+)		
162.8+x[c] *6*	(8^+)		
177.8+x[b] *6*	(7^-)		
205.1+x[d] *6*	8^+		
230.1+x[@] *5*	(8^+)		
266.5+x[a] *6*	(8^-)		
284.2+x[e] *6*	9^-	75.6 ns *14*	$T_{1/2}$: other: 78 ns *9* from γ(t) in 1987Kr20.
312.4+x[c] *6*	(9^+)		
363.1+x[&] *6*	(9^+)		
370.7+x[b] *6*	(9^-)		
413.7+x[d] *6*	9^+		
418.5+x[e] *7*	10^-		
495.1+x[c] *6*	(10^+)		
523.0+x[@] *6*	(10^+)		
526.5+x[a] *6*	(10^-)		
595.3+x[e] *7*	11^-		
642.1+x[d] *7*	10^+		
672.0+x[b] *7*	(11^-)		
696.4+x[&] *6*	(11^+)		
715.7+x[c] *6*	(11^+)		
805.2+x[e] *7*	12^-		
888.1+x[d] *7*	11^+		
902.1+x[a] *7*	(12^-)		

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^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20 (continued)

^{180}Re Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	Comments
905.4+x[@] 6	(12$^+$)		
949.3+x[c] 6	(12$^+$)		
1042.6+x[e] 7	13$^-$		
1079.3+x[b] 7	(13$^-$)		
1132.0+x[&] 6	(13$^+$)		
1149.5+x[d] 7	12$^+$		
1204.8+x[c] 6	(13$^+$)		
1303.7+x[e] 7	14$^-$		
1379.0+x[@] 8	(14$^+$)		
1386.7+x[a] 7	(14$^-$)		
1403.0+x 7	(12$^-$)		
1424.7+x[d] 7	13$^+$		
1482.1+x[c] 6	(14$^+$)		
1566.1+x[f] 7	13$^+$	74.2 ns *14*	$T_{1/2}$: other: 67 ns *9* from γ(t) in 1987Kr20.
1586.0+x[b] 7	(15$^-$)		
1586.9+x[e] 7	15$^-$		
1643.3+x[&] 6	(15$^+$)		
1669.7+x 7	(13$^-$)		
1700.4+x[g] 7	14$^-$	<5.6 ns	
1711.8+x[d] 7	14$^+$		
1754.9+x[h] 8	15$^-$	<5.6 ns	
1768.0+x[c] 6	(15$^+$)		
1846.3+x[f] 7	(14$^+$)		
1875.4+x[i] 8	16$^+$		
1887.9+x[e] 7	16$^-$		
1926.3+x[@] 8	(16$^+$)		
1929.5+x[g] 8	15$^-$		
1968.7+x[a] 7	(16$^-$)		
2007.7+x[d] 7	15$^+$		
2044.8+x[h] 8	16$^-$		
2075.3+x[c] 6	(16$^+$)		
2139.3+x[i] 8	17$^+$		
2147.9+x?[f] 7	(15$^+$)		
2161.2+x[g] 8	16$^-$		
2186.2+x[b] 7	(17$^-$)		
2204.8+x[e] 7	17$^-$		
2222.7+x[&] 6	(17$^+$)		
2309.6+x[d] 7	16$^+$		
2355.8+x[h] 8	17$^-$		
2375.6+x[c] 7	(17$^+$)		
2415.1+x[i] 8	18$^+$		
2420.2+x[g] 8	17$^-$		
2472.4+x[f] 7	(16$^+$)		
2532.2+x[e] 7	18$^-$		
2537.0+x[@] 9	(18$^+$)		
2616.7+x[d] 7	17$^+$		
2632.8+x[a] 7	(18$^-$)		
2682.9+x[h] 8	18$^-$		

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^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20 (continued)

^{180}Re Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$#	Comments
2693.5+x[c] 7	(18+)		
2706.3+x[i] 8	19+		
2709.5+x[g] 8	18−		
2860.9+x[&] 6	(19+)		
2867.4+x[b] 8	(19−)		
2871.9+x[e] 7	19−		
2921.8+x[d] 7	18+		
3001.7+x[g] 8	19−		
3014.1+x[i] 8	20+		
3051.2+x 8	18+		
3068.3+x 8	(18+)		
3122.1+x 8	(18+)		
3202.9+x[@] 9	(20+)		
3209.5+x[e] 7	20−		
3233.9+x[d] 7	(19+)		
3326.8+x[g] 8	20−		
3338.0+x[i] 8	21+		
3352.8+x?[a] 8	(20−)		
3368.9+x 7	(19−)		
3407.8+x 8	(20+)		
3471.0+x[j] 8	21−	9.0 μs 7	$T_{1/2}$: from beam pulse-γ(t) in ^{174}Yb(^{11}B,5nγ) using sum of 261γ, 264γ, 286γ, 457γ, and 678γ (2005El10).
3550.0+x[&] 7	(21+)		
3551.0+x[e] 7	21−		
3615.8+x[b] 8	(21−)		
3667.3+x[g] 8	21−		
3679.6+x[i] 8	22+		
3850.5+x[j] 8	22−		
3861.9+x[e] 8	22−		
3895.0+x[k] 8	(22+)		
3910.5+x[@] 11	(22+)		
4023.5+x[g] 8	22−		
4036.7+x[i] 8	23+		
4205.7+x[e] 8	23−		
4240.1+x[j] 8	23−		
4269.1+x[k] 8	(23+)		
4300.1+x[&] 7	(23+)		
4390.2+x[g] 8	23−		
4411.9+x?[b] 8	(23−)		
4412.2+x[i] 8	24+		
4525.2+x[e] 8	24−		
4636.8+x[j] 8	24−		
4643.2+x[@] 12	(24+)		
4651.0+x[k] 8	(24+)		
4801.3+x[i] 8	25+		
4888.2+x?[e] 8	(25−)		
5039.8+x[k] 8	(25+)		
5047.3+x[j] 10	(25−)		
5102.8+x?[&] 7	(25+)		

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^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20 (continued)

^{180}Re Levels (continued)

E(level)[†]	J$^{\pi}$[‡]
5205.9+x[i] 8	26$^+$
5435.4+x[k] 8	(26$^+$)
5454.5+x[j] 10	(26$^-$)
5837.5+x[k] 8	(27$^+$)
6249.2+x[k] 9	(28$^+$)
6672.9+x[k] 9	(29$^+$)

[†] From a least-squares fit to Eγ by evaluator.
[‡] As proposed in 2005El10 based on γ-ray multipolarities, decay patterns, assumed rotational structure and gyromagnetic ratios.
[#] From $\gamma\gamma$(t) in ^{174}Yb(^{11}B,5nγ) (2005El10), except where noted.
[@] Band(A): K$^{\pi}$=(4$^+$),α=0. Configuration=ν7/2[514]$\otimes\pi$1/2[541].
[&] Band(a): K$^{\pi}$=(4$^+$), α=1. Configuration=ν7/2[514]$\otimes\pi$1/2[541].
[a] Band(B): K$^{\pi}$=(5$^-$), α=0. Configuration=ν9/2[624]$\otimes\pi$1/2[541].
[b] Band(b): K$^{\pi}$=(5$^-$), α=1. Configuration=ν9/2[624]$\otimes\pi$1/2[541].
[c] Band(C): K$^{\pi}$=(7$^+$). Configuration=ν9/2[624]$\otimes\pi$5/2[402].
[d] Band(D): K$^{\pi}$=8$^+$. Configuration=ν7/2[514]$\otimes\pi$9/2[514].
[e] Band(E): K$^{\pi}$=9$^-$. Configuration=ν9/2[624]$\otimes\pi$9/2[514].
[f] Band(F): K$^{\pi}$=13$^+$, 4-qp band. Configuration=ν(7/2[514],9/2[624],5/2[512])$\otimes\pi$(5/2[402]).
[g] Band(G): K$^{\pi}$=14-, 4-qp band. Configuration=ν(7/2[514],9/2[624],7/2[633])$\otimes\pi$(5/2[402]).
[h] Band(H): K$^{\pi}$=15$^-$; 4-qp band. Configuration=ν(7/2[514],9/2[624],5/2[512])$\otimes\pi$(9/2[514]).
[i] Band(I): K$^{\pi}$=16$^+$; 4-qp band. Configuration=ν(7/2[514],9/2[624],7/2[633])$\otimes\pi$(9/2[514]).
[j] Band(J): K$^{\pi}$=21$^-$; 6-qp band. Configuration=ν(7/2[514],9/2[624],5/2[512])$\otimes\pi$(5/2[402],9/2[514], 7/2[404]). The spin-parity of 5048 and 5455 levels in this band are considered as tentative based on e-mail reply from P.M. Walker on November 21, 2005, since the placements of 799.2γ and 809.2γ have now been removed.
[k] Band(K): K$^{\pi}$=(22$^+$); 6-qp band. Configuration=ν(7/2[514],9/2[624],7/2[633])$\otimes\pi$(5/2[402],9/2[514], 7/2[404]).

γ(^{180}Re)

R(DCO) values are given in 2005El10, however, the gating transition used to extract the R(DCO) ratio is not explicity stated. Since an unambiguous determination of the dipole/quadrupole nature of the transition can not be made from the ratios alone, these values are omitted here.
Conversion electron data are from 2005El10 and A$_2$ coefficients are from 1987Kr20.

E$_\gamma$[†]	I$_\gamma$[†]	E$_i$(level)	J$_i^{\pi}$	E$_f$	J$_f^{\pi}$	Mult.[‡]	Comments
(25.0)		70.6+x	(7$^+$)	45.8+x	(6$^+$)		
42.4 *3*	7 *3*	205.1+x	8$^+$	162.8+x	(8$^+$)	M1	α(exp)=13 *4* α(exp) from transition intensity balance.
45.8 *5*	18 *3*	45.8+x	(6$^+$)	0.0+x	(5$^+$)		
54.8 *5*	6 *3*	1754.9+x	15$^-$	1700.4+x	14$^-$	M1	α(exp)=7 *2* α(exp) from transition intensity balance.
(62.9)	#	3471.0+x	21$^-$	3407.8+x	(20$^+$)		
77.5 *2*	3.6 *12*	123.5+x	(7$^+$)	45.8+x	(6$^+$)	M1	α(exp)=8.3 *3* α(exp) from transition intensity balance.
79.1 *2*	2.0 *4*	284.2+x	9$^-$	205.1+x	8$^+$		
(85.4)	#	1754.9+x	15$^-$	1669.7+x	(13$^-$)		

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^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20 (continued)

γ(^{180}Re) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	Comments
88.5 *2*	7.0 *17*	266.5+x	(8$^-$)	177.8+x	(7$^-$)			
92.2 *6*	8.5 *12*	162.8+x	(8$^+$)	70.6+x	(7$^+$)	D		Mult.: from A_2=−0.7 *2*.
102.2 *1*	2.1 *10*	3471.0+x	21$^-$	3368.9+x	(19$^-$)	E2		α(exp)=2.5 *9* α(exp) from transition intensity balance.
104.1 *1*	7.9 *18*	370.7+x	(9$^-$)	266.5+x	(8$^-$)			
106.3 *5*	7.2 *20*	230.1+x	(8$^+$)	123.5+x	(7$^+$)			
120.5 *1*	33 *7*	1875.4+x	16$^+$	1754.9+x	15$^-$	E1		α(exp)=0.6 *3* α(exp) from transition intensity balance.
121.4 *2*	77 *22*	284.2+x	9$^-$	162.8+x	(8$^+$)	(D)		Mult.: from A_2<0, but with large uncertainty.
132.0[&] *3*	4.5 *14*	177.8+x	(7$^-$)	45.8+x	(6$^+$)			
133.2 *2*	2.4 *5*	363.1+x	(9$^+$)	230.1+x	(8$^+$)			
134.1 *4*	16.0 *17*	1700.4+x	14$^-$	1566.1+x	13$^+$			
134.3 *4*	10 *3*	418.5+x	10$^-$	284.2+x	9$^-$			
134.5 *2*	61 *15*	205.1+x	8$^+$	70.6+x	(7$^+$)			
141.4 *2*	3.8 *10*	1566.1+x	13$^+$	1424.7+x	13$^+$	M1		α(exp)=1.9 *2* α(exp) from transition intensity balance.
145.3 *1*	3.7 *8*	672.0+x	(11$^-$)	526.5+x	(10$^-$)			
149.5 *4*	21.8 *22*	312.4+x	(9$^+$)	162.8+x	(8$^+$)	D		Mult.: from A_2=−0.4 *2*.
155.7 *1*	24.8 *15*	526.5+x	(10$^-$)	370.7+x	(9$^-$)			
159.8 *1*	2.2 *5*	523.0+x	(10$^+$)	363.1+x	(9$^+$)			
163.1 *8*	6.0 *8*	1566.1+x	13$^+$	1403.0+x	(12$^-$)			
173.4 *3*	1.7 *8*	696.4+x	(11$^+$)	523.0+x	(10$^+$)			
176.8 *2*	21.1 *17*	595.3+x	11$^-$	418.5+x	10$^-$			
177.1 *6*	5.1 *6*	1079.3+x	(13$^-$)	902.1+x	(12$^-$)			
182.5 *6*	15.4 *29*	495.1+x	(10$^+$)	312.4+x	(9$^+$)			
184.3 *1*	3.4 *11*	230.1+x	(8$^+$)	45.8+x	(6$^+$)			
193.1 *2*	4.7 *10*	370.7+x	(9$^-$)	177.8+x	(7$^-$)			
199.8 *3*	3.1 *13*	1586.0+x	(15$^-$)	1386.7+x	(14$^-$)			
201.2 *8*	6.0 *6*	696.4+x	(11$^+$)	495.1+x	(10$^+$)			
208.6 *2*	37.7 *14*	413.7+x	9$^+$	205.1+x	8$^+$	(D)		Mult.: from A_2<0, but with large uncertainty.
209.9 *4*	31.9 *13*	805.2+x	12$^-$	595.3+x	11$^-$	D		Mult.: from A_2=−0.31 *16*.
210.6 *4*	2.6 *13*	523.0+x	(10$^+$)	312.4+x	(9$^+$)			
220.5 *1*	2.8 *4*	715.7+x	(11$^+$)	495.1+x	(10$^+$)			
228.4 *4*	35 *3*	642.1+x	10$^+$	413.7+x	9$^+$	D		Mult.: from A_2=−0.3 *1*.
229.1 *2*	6.8 *11*	1929.5+x	15$^-$	1700.4+x	14$^-$			
229.9 *1*	13 *3*	902.1+x	(12$^-$)	672.0+x	(11$^-$)			
231.4 *3*	6 *3*	2161.2+x	16$^-$	1929.5+x	15$^-$			
233.6 *2*	3.2 *6*	949.3+x	(12$^+$)	715.7+x	(11$^+$)			
237.4 *2*	20.7 *16*	1042.6+x	13$^-$	805.2+x	12$^-$			
239.6 *1*	7.4 *10*	363.1+x	(9$^+$)	123.5+x	(7$^+$)			
241.8 *1*	5.5 *5*	312.4+x	(9$^+$)	70.6+x	(7$^+$)			
245.9 *5*	29 *3*	888.1+x	11$^+$	642.1+x	10$^+$	M1+E2	0.9 *+5−3*	α(K)exp=0.23 *5*
252.9 *3*	2.3 *10*	949.3+x	(12$^+$)	696.4+x	(11$^+$)			
255.5 *1*	8.2 *13*	1204.8+x	(13$^+$)	949.3+x	(12$^+$)			
259.5 *2*	9 *4*	2420.2+x	17$^-$	2161.2+x	16$^-$			
260.3 *2*	12 *4*	526.5+x	(10$^-$)	266.5+x	(8$^-$)			
261.1 *4*	9.6 *9*	1303.7+x	14$^-$	1042.6+x	13$^-$			
261.4 *5*	31 *4*	1149.5+x	12$^+$	888.1+x	11$^+$			
262.4 *2*	3.8 *7*	1566.1+x	13$^+$	1303.7+x	14$^-$			
263.9 *1*	29.9 *15*	2139.3+x	17$^+$	1875.4+x	16$^+$			
275.2 *1*	13.9 *23*	1424.7+x	13$^+$	1149.5+x	12$^+$			
275.9 *1*	25 *5*	2415.1+x	18$^+$	2139.3+x	17$^+$	M1+E2	0.70 *+15−20*	α(K)exp=0.190 *25*; DCO=1.06 *2*
277.3 *4*	3.3 *16*	1482.1+x	(14$^+$)	1204.8+x	(13$^+$)			

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^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20 (continued)

γ(^{180}Re) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	Comments
280.2[&] *2*	5.6 *24*	1846.3+x	(14$^+$)	1566.1+x	13$^+$			
283.2 *6*	3.0 *20*	1586.9+x	15$^-$	1303.7+x	14$^-$			
285.7 *1*	6.0 *20*	3407.8+x	(20$^+$)	3122.1+x	(18$^+$)	E2		α(K)exp=0.077 *12*
285.9 *4*	4.2 *13*	1768.0+x	(15$^+$)	1482.1+x	(14$^+$)			
287.2 *4*	4.2 *19*	1711.8+x	14$^+$	1424.7+x	13$^+$			
289.9 *2*	12 *5*	2709.5+x	18$^-$	2420.2+x	17$^-$			
290.0 *1*	4.4 *14*	2044.8+x	16$^-$	1754.9+x	15$^-$	(D)		Mult.: from A_2<0, but with large uncertainty.
291.1 *1*	6.6 *15*	2706.3+x	19$^+$	2415.1+x	18$^+$			
292.1 *4*	6 *3*	3001.7+x	19$^-$	2709.5+x	18$^-$			
293.0 *2*	6.7 *22*	523.0+x	(10$^+$)	230.1+x	(8$^+$)			
295.9 *2*	4.9 *9*	2007.7+x	15$^+$	1711.8+x	14$^+$			
300.3 *6*	6.5 *7*	2375.6+x	(17$^+$)	2075.3+x	(16$^+$)			
300.5 *4*	2.5 *10*	3368.9+x	(19$^-$)	3068.3+x	(18$^+$)			
301.0 *1*	7.5 *8*	1887.9+x	16$^-$	1586.9+x	15$^-$			
301.6[&] *2*	[#]	2147.9+x?	(15$^+$)	1846.3+x	(14$^+$)			
301.7 *4*	0.9 *8*	672.0+x	(11$^-$)	370.7+x	(9$^-$)			
301.8 *1*	11.1 *13*	2309.6+x	16$^+$	2007.7+x	15$^+$			
305.1 *3*	3.1 *7*	2921.8+x	18$^+$	2616.7+x	17$^+$			
307.1 *1*	9.7 *11*	2616.7+x	17$^+$	2309.6+x	16$^+$			
307.2 *6*	6.2 *6*	2075.3+x	(16$^+$)	1768.0+x	(15$^+$)			
307.4 *2*	6.9 *24*	3014.1+x	20$^+$	2706.3+x	19$^+$	M1+E2	1.2 *+5−3*	α(K)exp=0.107 *20*
307.8 *3*	9 *3*	1386.7+x	(14$^-$)	1079.3+x	(13$^-$)			
310.9 *2*	1.0 *2*	3861.9+x	22$^-$	3551.0+x	21$^-$			
311.0 *4*	10.0 *10*	595.3+x	11$^-$	284.2+x	9$^-$			
311.0 *2*	6.2 *22*	2355.8+x	17$^-$	2044.8+x	16$^-$			
312.1 *3*	2.9 *9*	3233.9+x	(19$^+$)	2921.8+x	18$^+$			
316.9 *2*	3.5 *13*	2204.8+x	17$^-$	1887.9+x	16$^-$			
317.7 *4*	3.0 *10*	3368.9+x	(19$^-$)	3051.2+x	18$^+$			
317.9 *1*	6.5 *20*	2693.5+x	(18$^+$)	2375.6+x	(17$^+$)			
319.2 *4*	[#]	3001.7+x	19$^-$	2682.9+x	18$^-$			
319.6 *5*	0.7 *4*	4525.2+x	24$^-$	4205.7+x	23$^-$			
323.8 *3*	6.9 *24*	3338.0+x	21$^+$	3014.1+x	20$^+$			
324.5[&] *2*	[#]	2472.4+x	(16$^+$)	2147.9+x?	(15$^+$)			
325.1 *3*	8 *3*	3326.8+x	20$^-$	3001.7+x	19$^-$			
327.1 *2*	6.2 *10*	2682.9+x	18$^-$	2355.8+x	17$^-$			
327.3 *1*	3.3 *7*	2532.2+x	18$^-$	2204.8+x	17$^-$			
331.9 *8*	6.5 *7*	495.1+x	(10$^+$)	162.8+x	(8$^+$)			
333.3 *1*	6.5 *15*	696.4+x	(11$^+$)	363.1+x	(9$^+$)			
336.9 *6*	2.3 *8*	3209.5+x	20$^-$	2871.9+x	19$^-$			
339.8 *2*	2.3 *4*	2871.9+x	19$^-$	2532.2+x	18$^-$			
340.9 *2*	4.2 *22*	3667.3+x	21$^-$	3326.8+x	20$^-$			
341.0 *8*	9 *3*	3679.6+x	22$^+$	3338.0+x	21$^+$			
341.5 *1*	3.2 *5*	3551.0+x	21$^-$	3209.5+x	20$^-$			
343.4 *6*	2.4 *9*	4205.7+x	23$^-$	3861.9+x	22$^-$			
352.6 *2*	2.1 *5*	715.7+x	(11$^+$)	363.1+x	(9$^+$)			
356.6 *2*	6.2 *25*	4023.5+x	22$^-$	3667.3+x	21$^-$			
357.8 *2*	3.8 *22*	4036.7+x	23$^+$	3679.6+x	22$^+$			
363.0[&] *2*	[#]	4888.2+x?	(25$^-$)	4525.2+x	24$^-$			
366.3 *3*	2.3 *12*	4390.2+x	23$^-$	4023.5+x	22$^-$			
374.0 *1*	4.8 *13*	4269.1+x	(23$^+$)	3895.0+x	(22$^+$)			
375.8 *1*	14 *3*	902.1+x	(12$^-$)	526.5+x	(10$^-$)			
375.8 *1*	7.0 *5*	4412.2+x	24$^+$	4036.7+x	23$^+$			
380.0 *4*	4.1 *8*	3850.5+x	22$^-$	3471.0+x	21$^-$			
381.9 *1*	3.0 *11*	4651.0+x	(24$^+$)	4269.1+x	(23$^+$)			

Continued on next page (footnotes at end of table)

^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20 (continued)

γ(^{180}Re) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	Comments
382.4 *1*	17 *3*	905.4+x	(12$^+$)	523.0+x	(10$^+$)			
382.5[&] *3*	7.4 *25*	1968.7+x	(16$^-$)	1586.0+x	(15$^-$)			
383.7 *6*	2.0 *7*	696.4+x	(11$^+$)	312.4+x	(9$^+$)			
386.7 *6*	6.9 *7*	805.2+x	12$^-$	418.5+x	10$^-$			
388.7 *2*	1.5 *6*	5039.8+x	(25$^+$)	4651.0+x	(24$^+$)			
389.5 *2*	1.9 *12*	4240.1+x	23$^-$	3850.5+x	22$^-$			
389.5 *4*	6.7 *10*	4801.3+x	25$^+$	4412.2+x	24$^+$			
395.7 *3*	1.1 *5*	5435.4+x	(26$^+$)	5039.8+x	(25$^+$)			
396.6 *1*	3.6 *19*	4636.8+x	24$^-$	4240.1+x	23$^-$			
402.5 *6*	0.6 *4*	5837.5+x	(27$^+$)	5435.4+x	(26$^+$)			
403.4 *2*	3.8 *7*	715.7+x	(11$^+$)	312.4+x	(9$^+$)			
404.2 *2*	[#]	5205.9+x	26$^+$	4801.3+x	25$^+$			
407.2 *2*	10.0 *10*	1079.3+x	(13$^-$)	672.0+x	(11$^-$)			
407.2 *3*	[#]	5454.5+x	(26$^-$)	5047.3+x	(25$^-$)			
410.5 *2*	4.5 *8*	905.4+x	(12$^+$)	495.1+x	(10$^+$)			
410.5 *5*	4.5 *20*	5047.3+x	(25$^-$)	4636.8+x	24$^-$			
411.7 *4*	[#]	6249.2+x	(28$^+$)	5837.5+x	(27$^+$)			
416.3 *1*	5.4 *11*	1132.0+x	(13$^+$)	715.7+x	(11$^+$)			
416.6 *4*	19.8 *15*	1566.1+x	13$^+$	1149.5+x	12$^+$	M1+E2	1.0 *2*	α(K)exp=0.054 *6*
423.7 *2*	[#]	6672.9+x	(29$^+$)	6249.2+x	(28$^+$)			
424.0 *2*	10.7 *11*	3895.0+x	(22$^+$)	3471.0+x	21$^-$			
435.6 *1*	10.2 *23*	1132.0+x	(13$^+$)	696.4+x	(11$^+$)			
437.0 *4*	4.5 *16*	642.1+x	10$^+$	205.1+x	8$^+$	E2		Mult.: Q from A_2=+0.3 *1*, E2 from assumed band structure.
447.3 *4*	12.1 *11*	1042.6+x	13$^-$	595.3+x	11$^-$	E2		α(K)exp=0.023 *10* Mult.: A_2=+0.7 *2* is consistent with E2 character.
454.1 *6*	5.5 *17*	949.3+x	(12$^+$)	495.1+x	(10$^+$)			
456.8 *6*	11.8 *10*	3471.0+x	21$^-$	3014.1+x	20$^+$	E1		α(K)exp=0.0084 *10*
460.6 *2*	4.6 *21*	2161.2+x	16$^-$	1700.4+x	14$^-$			
473.6 *6*	14 *3*	1379.0+x	(14$^+$)	905.4+x	(12$^+$)			
474.3 *8*	16.3 *19*	888.1+x	11$^+$	413.7+x	9$^+$	E2		α(K)exp=0.026 *6* Mult.: A_2=+0.24 *2* is consistent with E2 character.
484.6 *1*	28 *6*	1386.7+x	(14$^-$)	902.1+x	(12$^-$)			
489.2 *2*	5.5 *10*	1204.8+x	(13$^+$)	715.7+x	(11$^+$)			
491.7 *5*	1.8 *19*	2420.2+x	17$^-$	1929.5+x	15$^-$			
498.6 *4*	11.7 *11*	1303.7+x	14$^-$	805.2+x	12$^-$			
506.5 *2*	16 *5*	1586.0+x	(15$^-$)	1079.3+x	(13$^-$)			
507.4 *3*	9.2 *22*	1149.5+x	12$^+$	642.1+x	10$^+$	E2		α(K)exp=0.020 *3*; α(L)exp=0.005 *2*
508.4 *2*	0.8 *2*	1204.8+x	(13$^+$)	696.4+x	(11$^+$)			
511.3 *1*	7.2 *17*	1643.3+x	(15$^+$)	1132.0+x	(13$^+$)			
523.5 *1*	6.0 *9*	1566.1+x	13$^+$	1042.6+x	13$^-$			
532.7 *2*	5.1 *10*	1482.1+x	(14$^+$)	949.3+x	(12$^+$)			
536.6 *2*	6.6 *13*	1424.7+x	13$^+$	888.1+x	11$^+$	E2		Mult.: Q from A_2=+0.37 *7*, E2 from assumed band structure.
539.7 *3*	4.0 *22*	2415.1+x	18$^+$	1875.4+x	16$^+$			
544.3 *4*	12.8 *10*	1586.9+x	15$^-$	1042.6+x	13$^-$			
547.3 *1*	9.5 *24*	1926.3+x	(16$^+$)	1379.0+x	(14$^+$)			
548.2 *1*	2.6 *21*	2709.5+x	18$^-$	2161.2+x	16$^-$			
562.3 *3*	3.8 *13*	1711.8+x	14$^+$	1149.5+x	12$^+$			
563.2 *2*	7.3 *4*	1768.0+x	(15$^+$)	1204.8+x	(13$^+$)			
567.0 *3*	2.8 *16*	2706.3+x	19$^+$	2139.3+x	17$^+$			
579.4 *2*	5.2 *16*	2222.7+x	(17$^+$)	1643.3+x	(15$^+$)			
581.5 *1*	4.6 *19*	3001.7+x	19$^-$	2420.2+x	17$^-$			
581.8[&] *2*	[#]	2147.9+x?	(15$^+$)	1566.1+x	13$^+$			

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^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20 (continued)

γ(^{180}Re) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
582.2 *4*	10 *5*	1968.7+x	(16$^-$)	1386.7+x	(14$^-$)		
583.0 *3*	6.7 *16*	2007.7+x	15$^+$	1424.7+x	13$^+$		
584.2 *1*	8.9 *13*	1887.9+x	16$^-$	1303.7+x	14$^-$		
593.2 *3*	4.7 *11*	2075.3+x	(16$^+$)	1482.1+x	(14$^+$)		
597.7 *4*	8.0 *20*	2309.6+x	16$^+$	1711.8+x	14$^+$	E2	Mult.: Q from A_2=0.52 *14*, E2 from assumed band structure.
599.7 *3*	6 *4*	3014.1+x	20$^+$	2415.1+x	18$^+$	E2	α(K)exp=0.012 *2*
600.2 *2*	16 *6*	2186.2+x	(17$^-$)	1586.0+x	(15$^-$)		
601.0 *2*	#	2355.8+x	17$^-$	1754.9+x	15$^-$		
607.6 *6*	10.7 *13*	2375.6+x	(17$^+$)	1768.0+x	(15$^+$)		
609.0 *1*	16.7 *22*	2616.7+x	17$^+$	2007.7+x	15$^+$		
610.6 *2*	8 *3*	2537.0+x	(18$^+$)	1926.3+x	(16$^+$)		
612.2 *2*	12.3 *18*	2921.8+x	18$^+$	2309.6+x	16$^+$		
616.9 *4*	4 *3*	3326.8+x	20$^-$	2709.5+x	18$^-$		
617.2[&] *1*	15.8 *21*	3233.9+x	(19$^+$)	2616.7+x	17$^+$		
618.2 *2*	#	2693.5+x	(18$^+$)	2075.3+x	(16$^+$)		
618.3 *8*	9.7 *10*	2204.8+x	17$^-$	1586.9+x	15$^-$		
626.1[&] *2*	#	2472.4+x	(16$^+$)	1846.3+x	(14$^+$)		
631.9 *5*	5 *5*	3338.0+x	21$^+$	2706.3+x	19$^+$		
638.1 *1*	2.8 *11*	2682.9+x	18$^-$	2044.8+x	16$^-$		
638.2 *2*	3.9 *15*	2860.9+x	(19$^+$)	2222.7+x	(17$^+$)		
644.5 *6*	7.0 *7*	2532.2+x	18$^-$	1887.9+x	16$^-$		
651.6 *6*	2.3 *4*	3861.9+x	22$^-$	3209.5+x	20$^-$		
654.8 *2*	2.1 *4*	4205.7+x	23$^-$	3551.0+x	21$^-$		
663.0 *4*	2.0 *9*	4525.2+x	24$^-$	3861.9+x	22$^-$		
664.1 *2*	5 *3*	2632.8+x	(18$^-$)	1968.7+x	(16$^-$)		
665.5 *1*	8 *4*	3679.6+x	22$^+$	3014.1+x	20$^+$		
665.9 *2*	6.9 *20*	3202.9+x	(20$^+$)	2537.0+x	(18$^+$)		
666.0 *4*	#	3667.3+x	21$^-$	3001.7+x	19$^-$		
667.1 *1*	6.2 *7*	2871.9+x	19$^-$	2204.8+x	17$^-$		
676.9 *4*	4.5 *8*	3209.5+x	20$^-$	2532.2+x	18$^-$		
678.1 *1*	16.9 *23*	1566.1+x	13$^+$	888.1+x	11$^+$	E2	α(K)exp=0.008 *1*
679.3 *2*	4.4 *5*	3551.0+x	21$^-$	2871.9+x	19$^-$		
681.2 *3*	6 *4*	2867.4+x	(19$^-$)	2186.2+x	(17$^-$)		
682.6[&] *4*	1.0 *4*	4888.2+x?	(25$^-$)	4205.7+x	23$^-$		
689.1 *2*	#	3550.0+x	(21$^+$)	2860.9+x	(19$^+$)		
696.5 *1*	5 *3*	4023.5+x	22$^-$	3326.8+x	20$^-$		
698.7 *2*	#	4036.7+x	23$^+$	3338.0+x	21$^+$		
707.6 *6*	2.2 *10*	3910.5+x	(22$^+$)	3202.9+x	(20$^+$)		
720.0[&] *2*	#	3352.8+x?	(20$^-$)	2632.8+x	(18$^-$)		
724.1 *5*	6 *3*	4390.2+x	23$^-$	3667.3+x	21$^-$		
731.8 *2*	#	4412.2+x	24$^+$	3679.6+x	22$^+$		
732.7 *5*	2.0 *10*	4643.2+x	(24$^+$)	3910.5+x	(22$^+$)		
748.4 *2*	#	3615.8+x	(21$^-$)	2867.4+x	(19$^-$)		
750.1 *2*	#	4300.1+x	(23$^+$)	3550.0+x	(21$^+$)		
756.1 *3*	0.7 *4*	4651.0+x	(24$^+$)	3895.0+x	(22$^+$)		
761.0 *1*	3.8 *5*	1566.1+x	13$^+$	805.2+x	12$^-$		
764.2 *2*	#	4801.3+x	25$^+$	4036.7+x	23$^+$		
768.3 *5*	1.2 *10*	4240.1+x	23$^-$	3471.0+x	21$^-$		
771.2 *4*	0.7 *4*	5039.8+x	(25$^+$)	4269.1+x	(23$^+$)		
784.2 *4*	0.7 *3*	5435.4+x	(26$^+$)	4651.0+x	(24$^+$)		
786.8 *3*	0.7 *5*	4636.8+x	24$^-$	3850.5+x	22$^-$		

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^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20 (continued)

γ(^{180}Re) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
794.1 *2*	#	5205.9+x	26^+	4412.2+x	24^+		
796.0[&] *2*	#	4411.9+x?	(23^-)	3615.8+x	(21^-)		
797.7 *3*	0.8 *4*	5837.5+x	(27^+)	5039.8+x	(25^+)		
[x]799.2[@] *4*	0.4 *3*						
802.7[&] *2*	#	5102.8+x?	(25^+)	4300.1+x	(23^+)		
807.8 *6*	1.9 *7*	1403.0+x	(12^-)	595.3+x	11^-		
[x]809.2[@] *4*	0.4 *3*						
813.5 *6*	0.6 *2*	6249.2+x	(28^+)	5435.4+x	(26^+)		
835.6 *6*	3 *2*	6672.9+x	(29^+)	5837.5+x	(27^+)		
895.3 *8*	0.8 *2*	1700.4+x	14^-	805.2+x	12^-		
912.2 *3*	1.3 *3*	3051.2+x	18^+	2139.3+x	17^+		
929.0 *2*	1.5 *2*	3068.3+x	(18^+)	2139.3+x	17^+		
982.8 *2*	1.3 *3*	3122.1+x	(18^+)	2139.3+x	17^+		
984.5 *1*	8.7 *13*	1403.0+x	(12^-)	418.5+x	10^-		
1074.4 *3*	2.3 *10*	1669.7+x	(13^-)	595.3+x	11^-		
1164.1 *3*	0.7 *2*	3368.9+x	(19^-)	2204.8+x	17^-		
1175.8 *1*	4.8 *16*	3051.2+x	18^+	1875.4+x	16^+	E2	α(K)exp=0.003 *1*
1192.9 *2*	1.5 *4*	3068.3+x	(18^+)	1875.4+x	16^+	(E2)	α(K)exp=0.005 *2* Mult.: M1 or E2 from α(K)exp, (E2) from assumed band structure.
1246.7 *1*	4.1 *10*	3122.1+x	(18^+)	1875.4+x	16^+		

[†] From 2005El10.
[‡] From conversion electron data of 2005El10, except where noted.
[#] Weak transition.
[@] Placements of 799.2γ from 5047.9, 25^- level and 809.2γ from 5455.2, 26^- level in band #9 (see Fig. 2 in 2005El10) have been removed based on e-mail reply from P.M. Walker on November 21, 2005. These γ-rays do not fit in the level scheme as shown in Fig. 2 and Table I of 2005El10.
[&] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

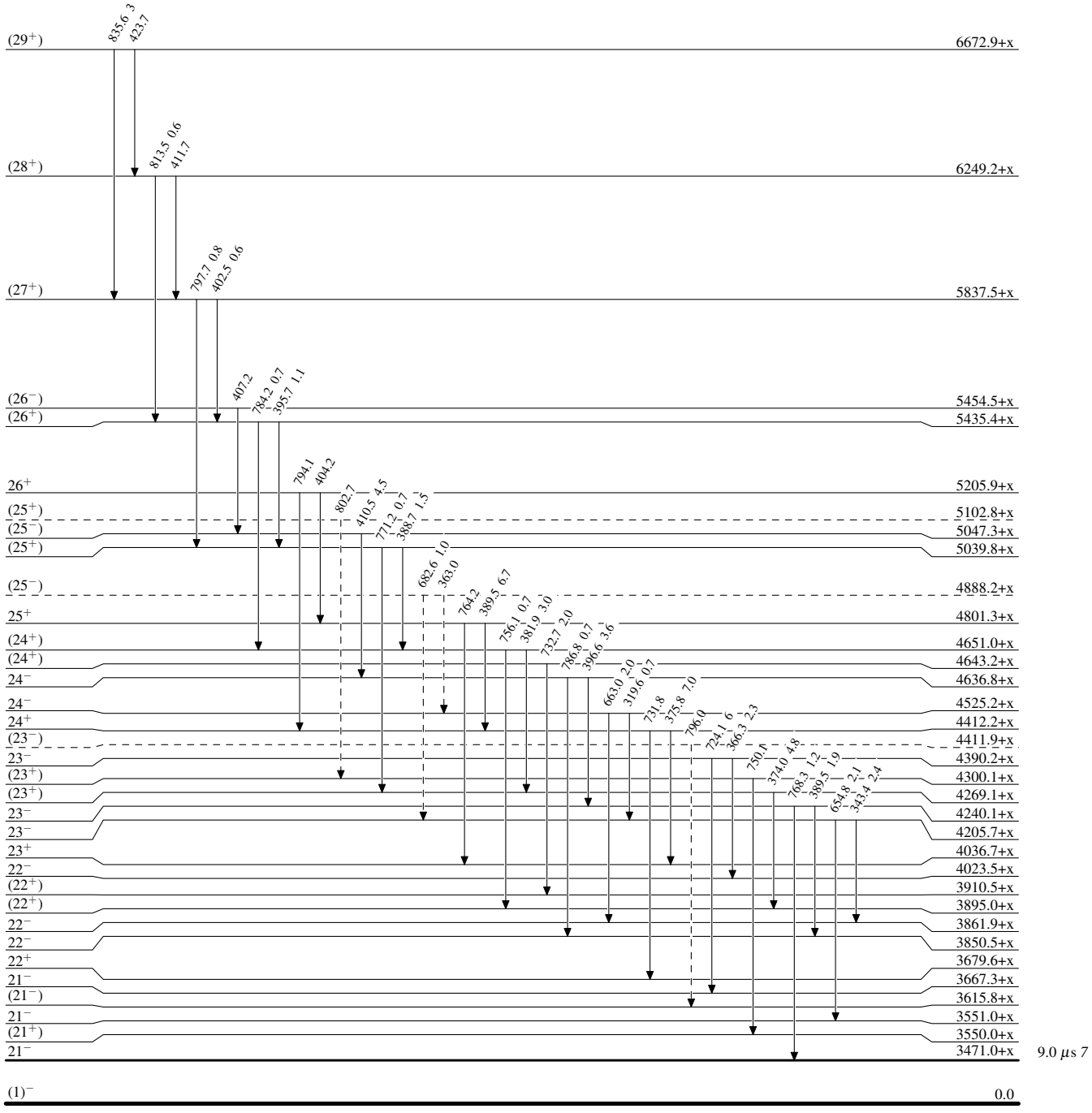
^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20

Level Scheme

Intensities: Relative I_γ

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)



$^{180}_{75}Re_{105}$

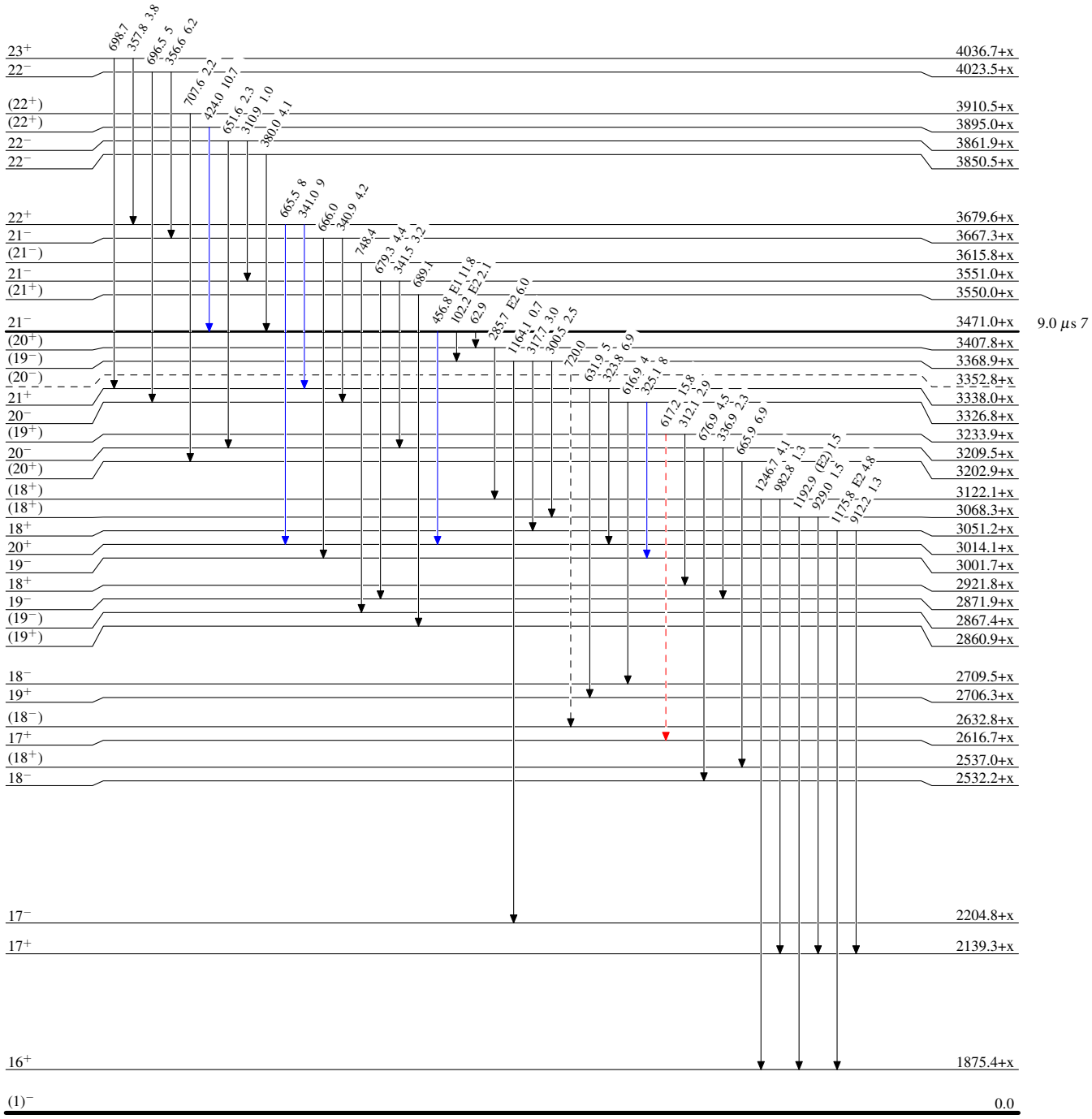
^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20

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)

Level Scheme (continued)

Intensities: Relative I_γ



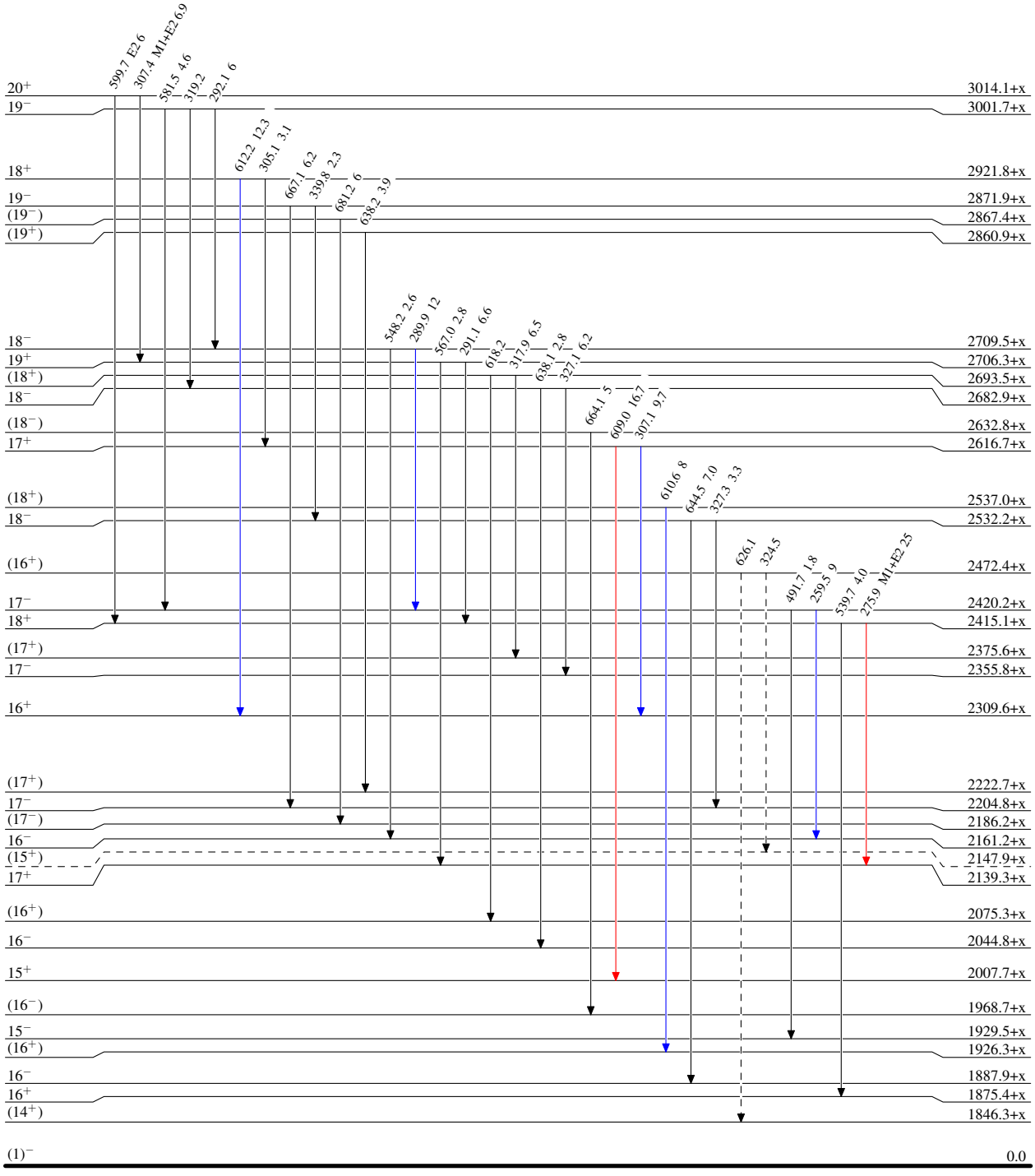
$^{180}_{75}Re_{105}$

^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20

Level Scheme (continued)

Intensities: Relative I_γ

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)



$^{180}_{75}Re_{105}$

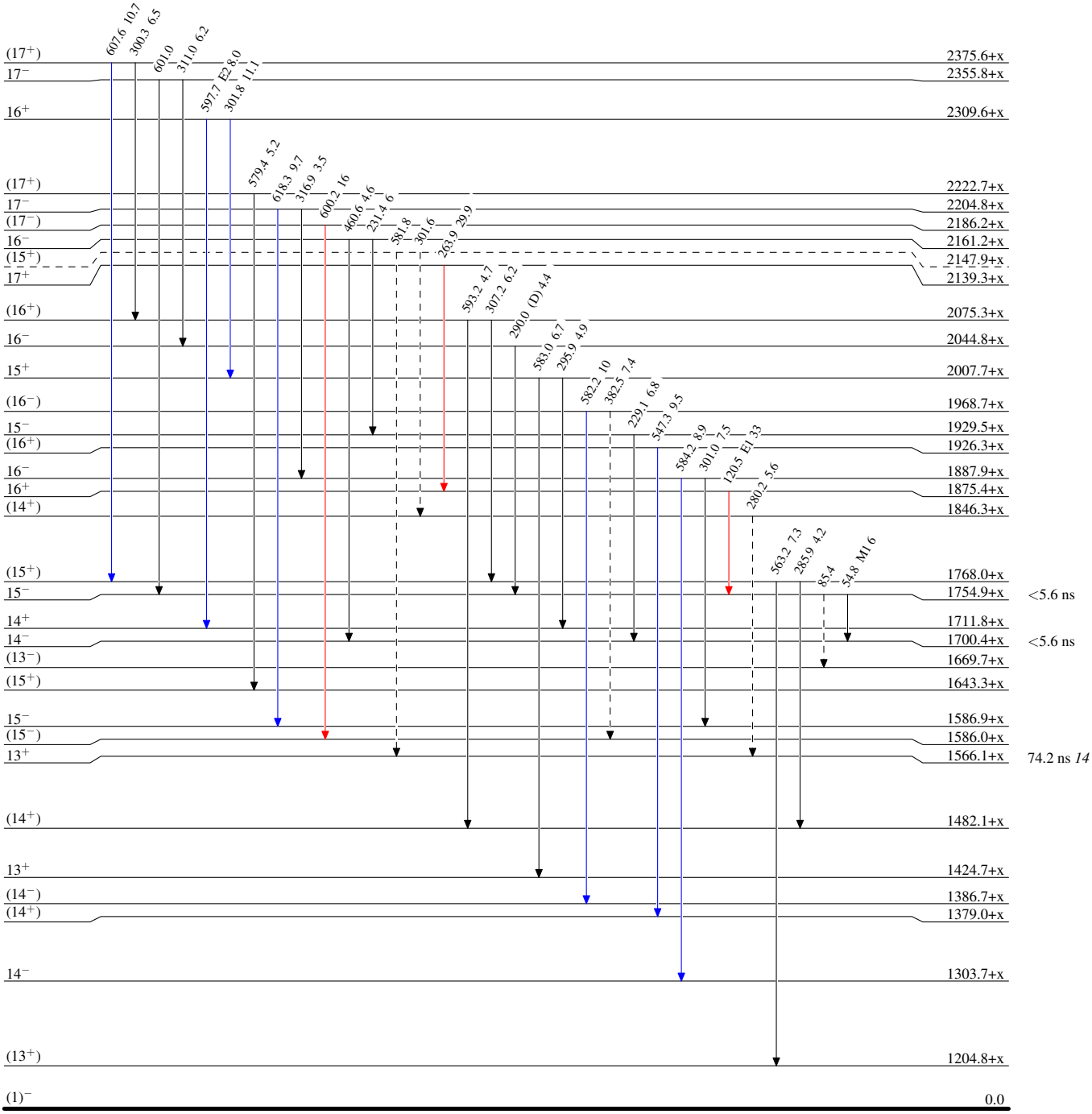
^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20

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)

Level Scheme (continued)

Intensities: Relative I_γ



$^{180}_{75}Re_{105}$

^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20

Level Scheme (continued)

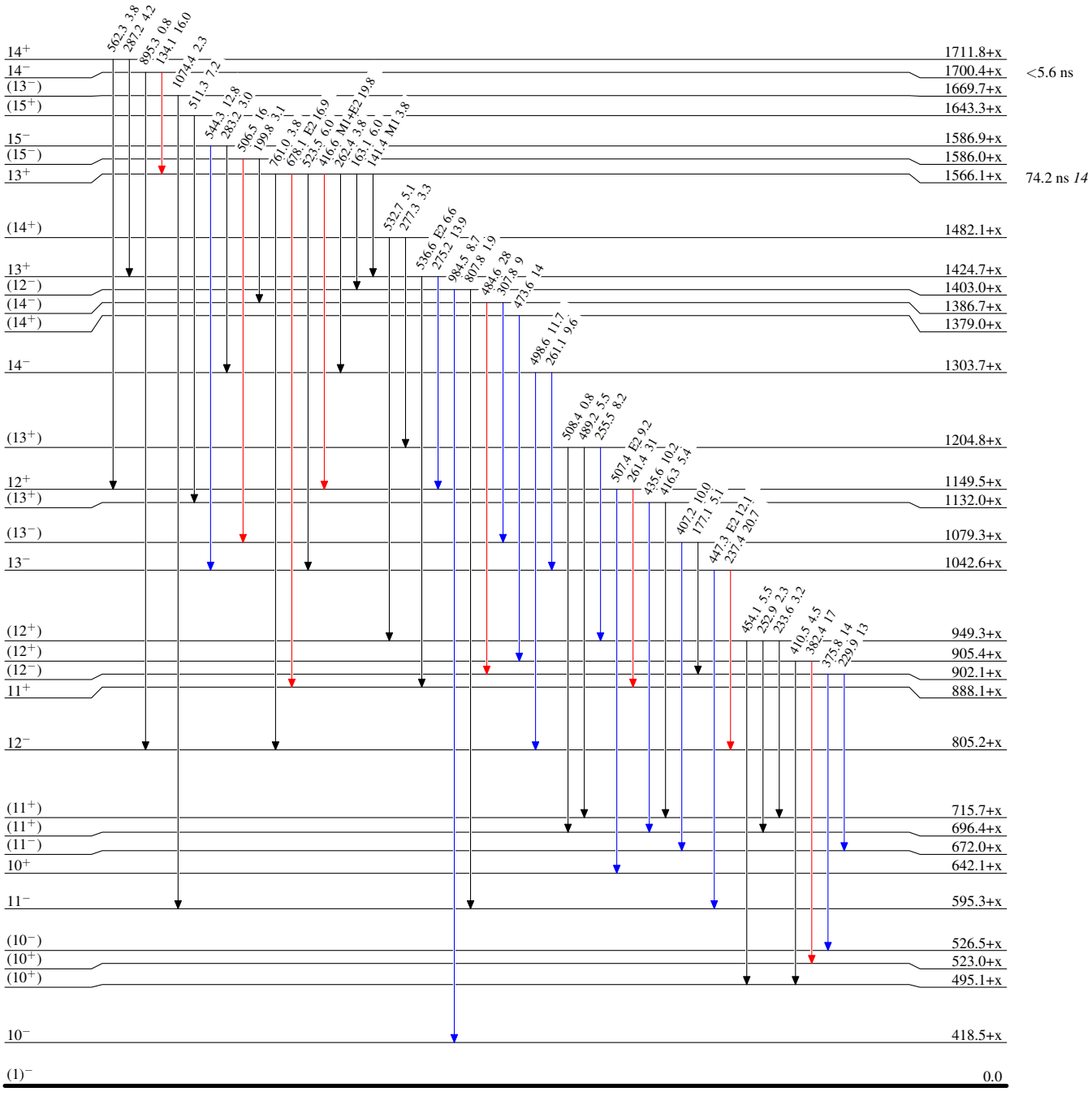
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



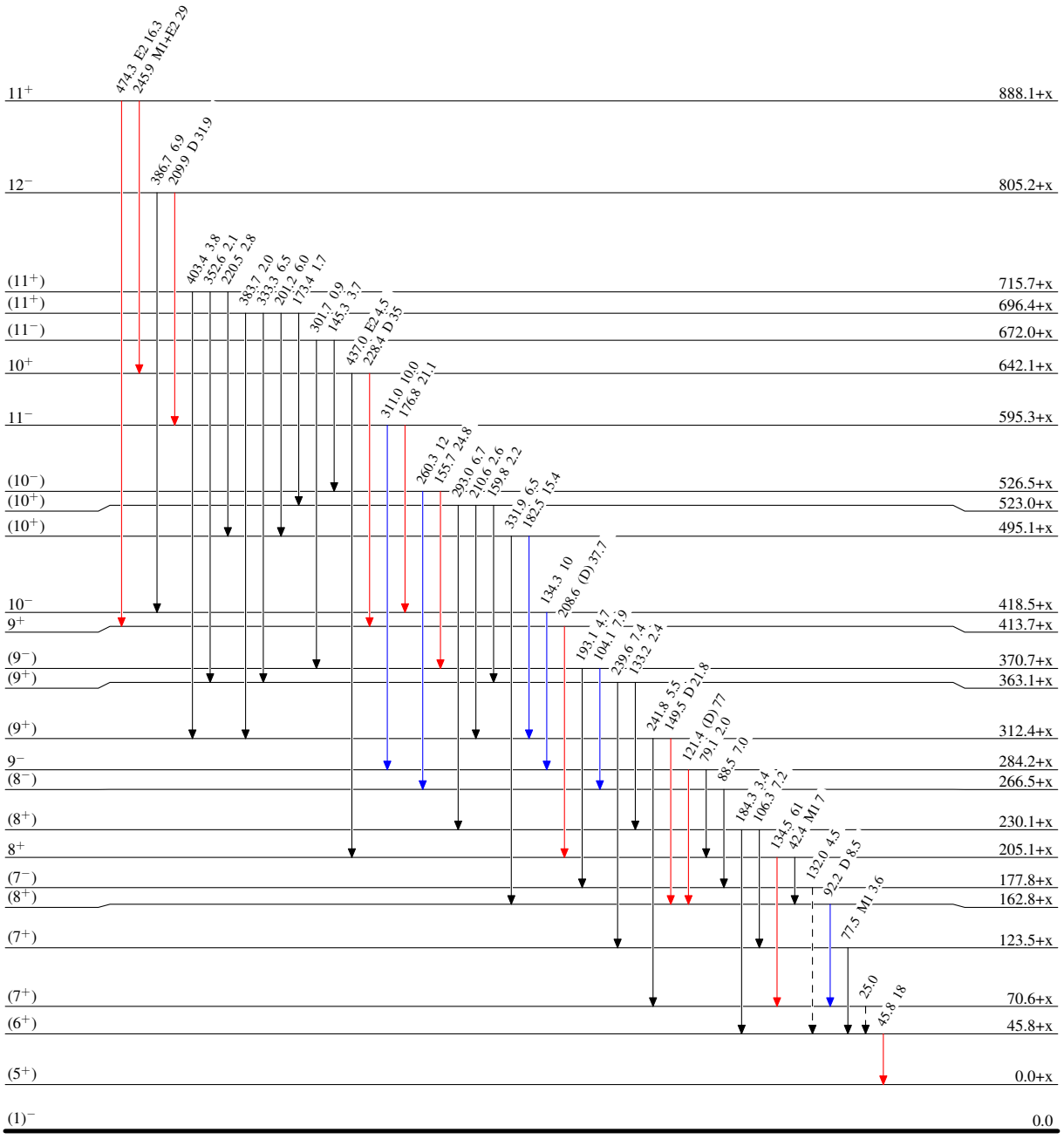
$^{180}_{75}Re_{105}$

^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20

Level Scheme (continued)

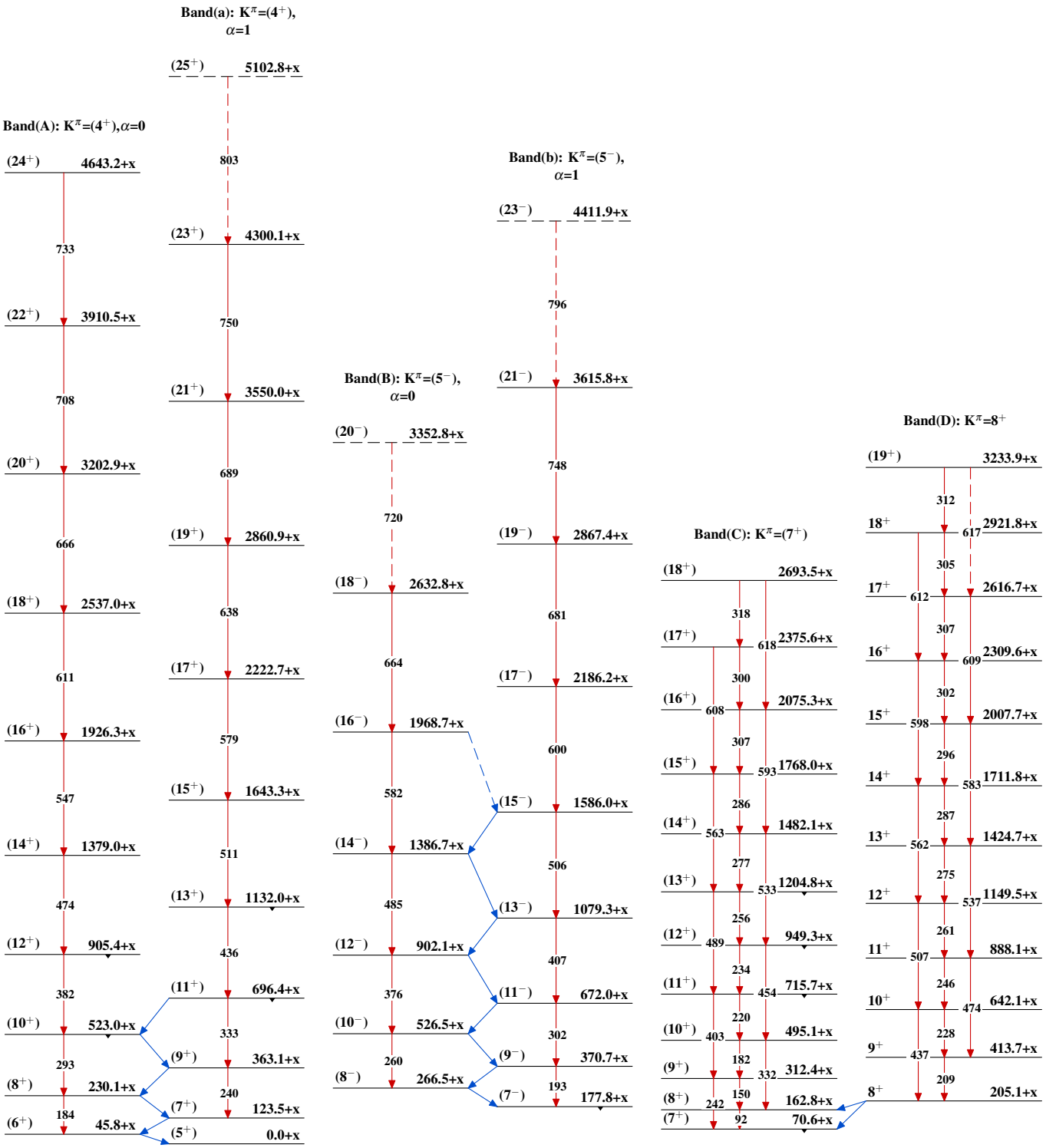
Intensities: Relative I_γ

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)



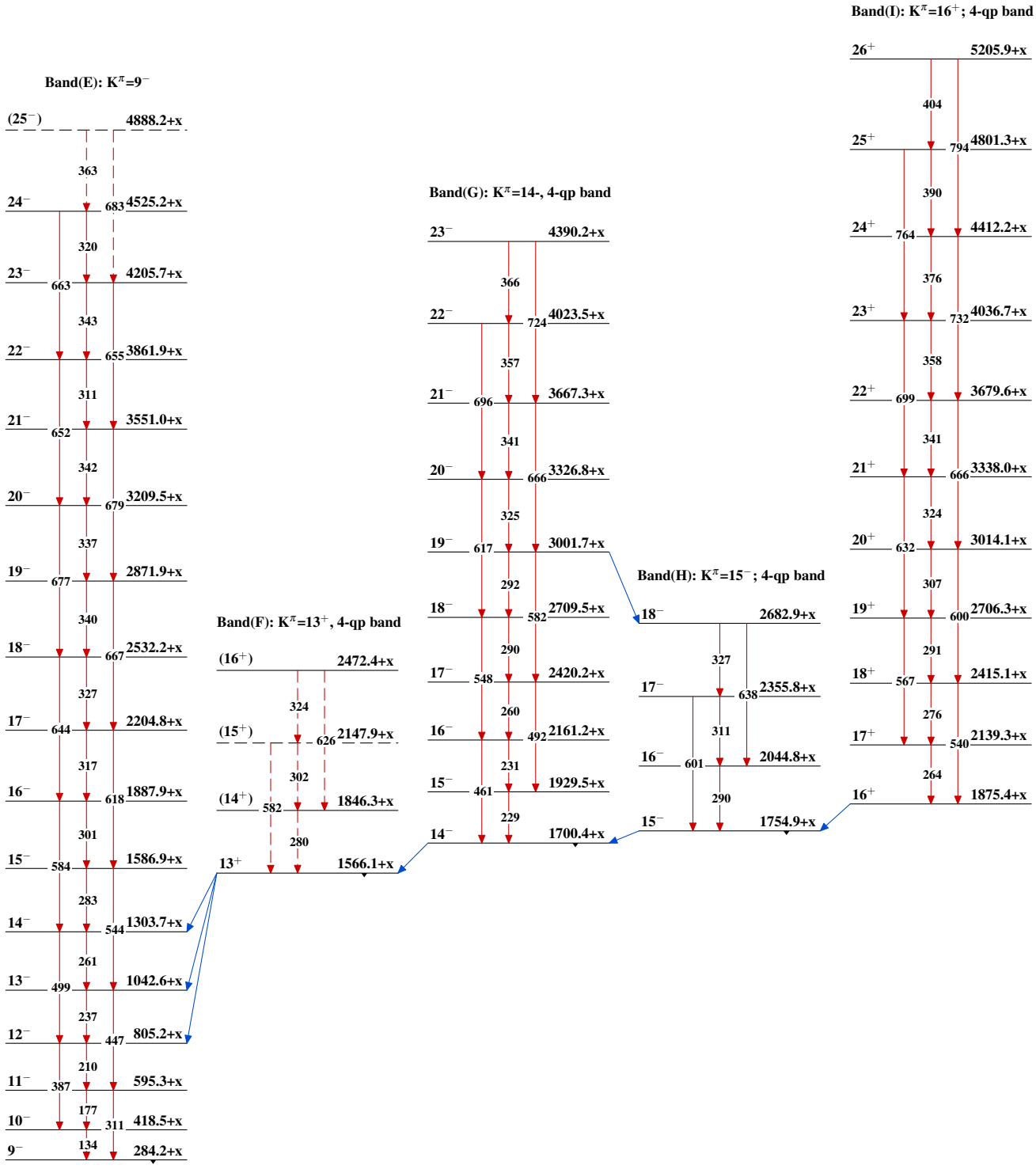
$^{180}_{75}Re_{105}$

^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20



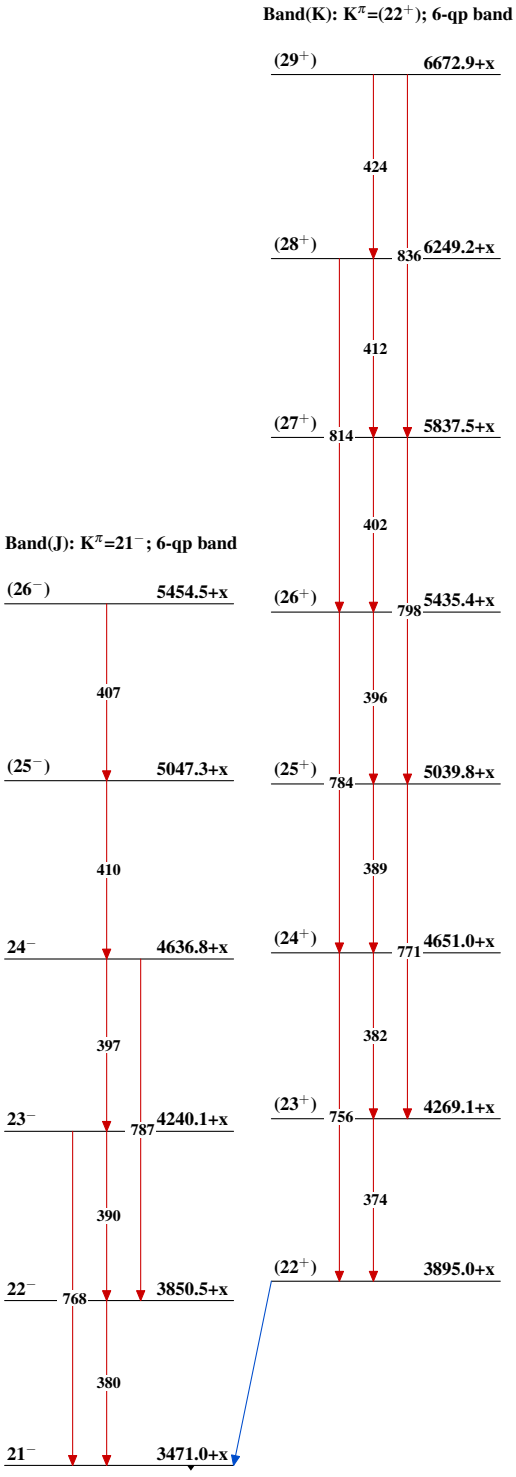
$^{180}_{75}Re_{105}$

^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20 (continued)



$^{180}_{75}Re_{105}$

^{176}Yb(^{10}B,6nγ),^{174}Yb(^{11}B,5nγ) 2005El10,1987Kr20 (continued)



$^{180}_{75}Re_{105}$