Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. A. Mccutchan and A. A. Sonzogni	NDS 115, 135 (2014)	1-Nov-2013

Q(β^-)=5312.4 *11*; S(n)=6082.52 *16*; S(p)=9188.4 *3*; Q(α)=−7.25×10^3 *3* 2012Wa38
S(2n)=16004.6 *3*; S(2p)=21555 *3* (2012Wa38).
α: Additional information 1.

^{88}Rb Levels

Cross Reference (XREF) Flags

A ^{88}Kr β^- decay
B ^{88}Rb IT decay (123 ns)
C ^{86}Kr(^{3}He,p)
D ^{87}Rb(d,p)
E ^{176}Yb(^{28}Si,Fγ), ^{208}Pb(^{18}O,Fγ)

E(level)†	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0	2$^-$	17.773 min *18*	ABCDE	%β^-=100 Q=−0.01 *10*; μ=+0.5117 *26* J$^\pi$: from atomic beam (1968Va03). L(d,p)=0+2 on 3/2$^-$ target. T$_{1/2}$: from 1989Ab22. Evaluators have increased the uncertainty to 0.1%. Value reported by 1989Ab22 is 17.773 min *11*. Others: 17.78 min *11* (1969Ra05), 17.7 min *1* (1969He16). μ,Q: from high-resolution LASER spectroscopy (1981Th04). Others: 0.508 *5* (1968Va03) and 0.50761 *1* (1979Ek02) both from atomic beam. δ<r^2>^{88,87}=0.139 fm^2 *8* (2013An02).
27.515 *9*	(3)$^-$		ABCDE	XREF: C(41). J$^\pi$: L(d,p)=2 on 3/2$^-$ target, L(^{3}He,p)=(3), M1+E2 27.5γ to 2$^-$, D 313γ from (4)$^-$.
196.292 *8*	(1)$^-$		A CD	XREF: C(205). J$^\pi$: L(^{3}He,p)=1, M1+E2 196γ to 2$^-$.
268.24 *3*	4$^-$		ABCDE	J$^\pi$: L(d,p)=2 on 3/2$^-$ target, L(^{3}He,p)=3+5.
340.40 *22*	(4$^-$)		B E	J$^\pi$: D 386γ from (5$^-$), 340γ to 2$^-$.
362.240 *10*	(2)$^-$		A CD	J$^\pi$: L(^{3}He,p)=(1+3), M1+E2 166γ to (1)$^-$.
390.546 *10*	(2$^-$)		A CD	J$^\pi$: log $f^{1u}t$=10.7 from 0$^+$, 122γ to 4$^-$.
407 *12*			CD	
726.51 *23*	(5$^-$)		B E	J$^\pi$: D 458γ to 4$^-$, assumption of increasing spin in heavy ion reaction.
862.349 *9*	2$^-$		A CD	J$^\pi$: L(d,p)=0 on 3/2$^-$ target, L(^{3}He,p)=1+3.
1086 *6*	2$^-$,3$^-$,4$^-$		C	J$^\pi$: L(^{3}He,p)=3.
1141.360 *22*	1$^-$,2$^-$		A CD	J$^\pi$: L(d,p)=0 on 3/2$^-$ target.
1166? *20*	(1$^-$,2$^-$)		D	J$^\pi$: L(d,p)=(0) on 3/2$^-$ target.
1182.090 *17*	(0,1,2)		A	J$^\pi$: 986γ to (1)$^-$, 1049γ from 1$^+$.
1212.577 *21*	(1,2)$^-$		A CD	J$^\pi$: L(d,p)=0 on 3/2$^-$ target.
1245.24 *4*	(2)$^-$		A CD	XREF: C(1237)D(1222). J$^\pi$: L(d,p)=2, L(^{3}He,p)=(3), 1303γ from 1$^+$.
1273 *6*	(0$^-$,1$^-$,2$^-$)		C	J$^\pi$: L(^{3}He,p)=(1).
1352.494 *22*	1$^-$,2$^-$		A D	J$^\pi$: L(d,p)=0 on 3/2$^-$ target.
1372 *5*	(0$^-$,1$^-$,2$^-$)		C	J$^\pi$: L(^{3}He,p)=(1).
1373.8 *3*	(7$^+$)	123 ns *13*	B E	%IT=100 J$^\pi$: (M2) 647γ to (5$^-$). T$_{1/2}$: from $\gamma\gamma$(t) in ^{208}Pb(^{18}O,F). Other: ≈100 ns (2000PoZZ). Configuration: $\pi g_{9/2}\nu d_{5/2}$ (2009Po10).
1441.51 *3*	(1,2$^-$)		A C	J$^\pi$: log *ft*=8.5, log $f^{1u}t$=9.4 from 0$^+$, L(^{3}He,p)=2,(1+3).
1603.83 *3*	(0$^-$,1$^-$,2$^-$)		A D	XREF: D(1610). J$^\pi$: L(d,p)=(2) on 3/2$^-$ target, 788γ from 1$^+$.
1622 *5*	(3$^+$,4$^-$)		C	J$^\pi$: L(^{3}He,p)=2+4,(3+5).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{88}Rb Levels (continued)

E(level)†	Jπ	XREF	Comments
1661.15 *4*	$1^-,2^-$	A D	Jπ: L(d,p)=0 on $3/2^-$ target.
1714.714 *24*	$0^-,1^-$	A C	Jπ: L(^{3}He,p)=1, log *ft*=7.3, log $f^{1u}t$=7.9 from 0^+.
1793.3 *3*	$0^-,1^-,2^-$	A C	Jπ: L(^{3}He,p)=1.
1871 *7*		C	
1915.52 *4*	$(1,2)^-$	A CD	Jπ: L(d,p)=2 on $3/2^-$ target. log *ft*=7.9, log $f^{1u}t$=8.5 from 0^+.
1951 *9*	$^-$	CD	Jπ: L(d,p)=2 on $3/2^-$ target.
2091 *4*	$3^+,4^+,5^+$	CD	Jπ: L(^{3}He,p)=4. Level is distinct from a tentatively observed 2089 level in ^{88}Kr β^- decay (not adopted) as the 1892γ decay to $(1)^-$ is inconsistent with the spin of this level.
2231.761 *14*	1^+	A C	Jπ: log *ft*=5.7 from 0^+.
2255 *9*		D	
2345 *5*	$2^-,3^-,4^-$	CD	Jπ: L(^{3}He,p)=3.
2392.147 *9*	1^+	A C	Jπ: log *ft*=4.4 from 0^+.
2456.00 *16*	$(0^-,1^-)$	A CD	XREF: C(2463). Jπ: L(^{3}He,p)=(1), log *ft*=7.2 from 0^+.
2500 *12*		D	
2548.420 *23*	1^+	A C	Jπ: log *ft*=5.3 from 0^+.
2562 *9*		D	
2728 *10*	(1^+)	CD	XREF: D(2710). Jπ: L(^{3}He,p)=(0+2).
2771.11 *4*	1^+	A D	Jπ: log *ft*=4.9 from 0^+.
2807 *11*	(2^-)	CD	XREF: D(2826). Jπ: L(^{3}He,p)=(1+3).
2924.4 *5*	(9^+)	E	Jπ: (Q) 1551γ to (7^+).
2932 *6*	$(1^+,2^+,3^+)$	CD	Jπ: L(^{3}He,p)=(2).
2978 *6*	2^-	C	Jπ: L(^{3}He,p)=1+3.
3119‡ *13*	$0^-,1^-,2^-$	C	Jπ: L(^{3}He,p)=1.
3192.0 *5*	(9^+)	E	Jπ: (Q) 1818γ to (7^+).
3258‡ *8*		C	
3311‡ *13*		C	
3389‡ *5*		C	
3457‡ *5*	(3^+)	C	Jπ: L(^{3}He,p)=(2+4).
3540‡ *6*	(2^-)	C	Jπ: L(^{3}He,p)=(1+3).
3587.9 *5*	(10^+)	E	
3724‡ *7*		C	
3786.7 *6*		E	
3851‡ *5*	1^+	C	Jπ: L(^{3}He,p)=0+2.
3973‡ *5*	(2^-)	C	Jπ: L(^{3}He,p)=(1+3).
4199‡ *5*	$(1)^+$	C	Jπ: L(^{3}He,p)=0(+2).
4242.9 *11*		E	
4256‡ *5*	(1^+)	C	Jπ: L(^{3}He,p)=0+2.
4485‡ *5*	(2^-)	C	Jπ: L(^{3}He,p)=1+3.
4611 *8*		C	
4783‡ *7*	$(2^-,3^-,4^-)$	C	Jπ: L(^{3}He,p)=(3).
4831‡ *8*	$1^+,2^+,3^+$	C	Jπ: L(^{3}He,p)=2.
5009.0 *8*		E	
5905.0 *13*		E	

† From least-squares fit to Eγ for levels connected by γ's. The others are from (d,p), (^{3}He,p), or weighted averages of both when possible.

‡ Level energy uncertainty from (^{3}He,p) does not include 100 keV uncertainty in spectrograph calibration above 3 MeV.

Adopted Levels, Gammas (continued)

γ(^{88}Rb)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	α	Comments
27.515	(3)$^-$	27.513 *14*	100	0.0	2$^-$	M1(+E2)	0.07 *+3−7*	6.3 *5*	α(exp)=6.4 *5* α(K)=5.4 *3*; α(L)=0.78 *19*; α(M)=0.13 *3*; α(N)=0.014 *3*; α(O)=0.000476 *18*
196.292	(1)$^-$	168.5 *2*	≤0.03	27.515	(3)$^-$				
		196.301 *10*	100.0 *7*	0.0	2$^-$	M1+E2	0.92 *15*	0.050 *5*	α(K)exp=0.044 *4*; α(L)exp=0.005 *1* α(K)=0.044 *5*; α(L)=0.0053 *6*; α(M)=0.00088 *10*; α(N)=9.7×10^{-5} *10*; α(O)=3.6×10^{-6} *4*
268.24	4$^-$	240.71 *4*	100	27.515	(3)$^-$				
340.40	(4$^-$)	313.0[‡] *3*	100[‡] *12*	27.515	(3)$^-$	D			Mult.: from γγ(θ) in ^{208}Pb(^{18}O,Fγ).
		339.8[‡] *5*	10[‡] *5*	0.0	2$^-$				
362.240	(2)$^-$	165.98 *4*	100.0 *4*	196.292	(1)$^-$	M1+E2	0.74 *10*	0.067 *8*	α(K)exp=0.067 *7* α(K)=0.058 *7*; α(L)=0.0072 *9*; α(M)=0.00118 *15*; α(N)=0.000129 *16*; α(O)=4.9×10^{-6} *5*
		334.71 *3*	4.7 *2*	27.515	(3)$^-$				
		362.226 *13*	72.5 *18*	0.0	2$^-$				
390.546	(2$^-$)	28.26 *11*	4.3 *16*	362.240	(2)$^-$	[M1]		5.42 *10*	α(K)=4.77 *9*; α(L)=0.551 *10*; α(M)=0.0911 *17*; α(N)=0.01022 *19*; α(O)=0.000426 *8*
		122.27 *6*	30.6 *11*	268.24	4$^-$	[E2]		0.463	α(K)=0.396 *6*; α(L)=0.0566 *8*; α(M)=0.00934 *14*; α(N)=0.000980 *14*; α(O)=3.04×10^{-5} *5*
		363.5 *5*	8 *5*	27.515	(3)$^-$				
		390.543 *11*	100 *6*	0.0	2$^-$				
726.51	(5$^-$)	386.0[‡] *3*	100[‡] *11*	340.40	(4$^-$)	D			Mult.: from γγ(θ) in ^{208}Pb(^{18}O,F).
		458.3[‡] *3*	100[‡] *11*	268.24	4$^-$	D			Mult.: from γγ(θ) in ^{208}Pb(^{18}O,F).
862.349	2$^-$	471.80 *3*	5.60 *11*	390.546	(2$^-$)				
		500.02 *6*	0.75 *5*	362.240	(2)$^-$				
		665.94 *6*	0.67 *11*	196.292	(1)$^-$				
		834.830 *3*	100.0 *11*	27.515	(3)$^-$				
		862.327 *19*	5.17 *13*	0.0	2$^-$				
1141.360	1$^-$,2$^-$	779.12 *8*	7.5 *16*	362.240	(2)$^-$				
		944.92 *4*	22.9 *11*	196.292	(1)$^-$				
		1141.33 *6*	100.0 *24*	0.0	2$^-$				
1182.090	(0,1,2)	985.780 *16*	100	196.292	(1)$^-$				
1212.577	(1,2)$^-$	350.04 *19*	2.5 *10*	862.349	2$^-$				
		822.01 *12*	13.1 *15*	390.546	(2$^-$)				
		850.34 *5*	25.1 *15*	362.240	(2)$^-$				
		1184.95 *4*	100 *4*	27.515	(3)$^-$				
		1212.73 *17*	20 *7*	0.0	2$^-$				
1245.24	(2)$^-$	883.06[&] *14*	100	362.240	(2)$^-$				
		1245.22[@&] *4*		0.0	2$^-$				
1352.494	1$^-$,2$^-$	961.83 *6*	52 *7*	390.546	(2$^-$)				
		990.09 *9*	89 *11*	362.240	(2)$^-$				

$^{88}_{37}Rb_{51}$-3

Adopted Levels, Gammas (continued)

γ(^{88}Rb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	α	Comments
1352.494	1⁻,2⁻	1324.98 *4*	100 *22*	27.515	(3)⁻			
		1352.32 *11*	100 *13*	0.0	2⁻			
1373.8	(7⁺)	647.2[‡] *3*	100[‡] *10*	726.51	(5⁻)	(M2)	0.00374	α(K)=0.00330 *5*; α(L)=0.000368 *6*; α(M)=6.08×10⁻⁵ *9*; α(N)=6.90×10⁻⁶ *10*; α(O)=2.97×10⁻⁷ *5* B(M2)(W.u.)=0.102 *18* Mult.: from γγ(θ) in ^{208}Pb(^{18}O,F).
		1105.9[‡] *7*	10[‡] *3*	268.24	4⁻	[E3]	8.55×10⁻⁴	α(K)=0.000756 *11*; α(L)=8.36×10⁻⁵ *12*; α(M)=1.381×10⁻⁵ *20*; α(N)=1.557×10⁻⁶ *22* α(O)=6.59×10⁻⁸ *10* B(E3)(W.u.)=1.0 *4*
1441.51	(1,2⁻)	579.04 *14*	7 *3*	862.349	2⁻			
		1245.22[@] *4*	100 *5*	196.292	(1)⁻			
1603.83	(0⁻,1⁻,2⁻)	391.20 *10*	17 *9*	1212.577	(1,2)⁻			
		421.70 *18*	2.3 *8*	1182.090	(0,1,2)			
		1603.79 *5*	100 *6*	0.0	2⁻			
1661.15	1⁻,2⁻	798.65 *21*	24 *9*	862.349	2⁻			
		1298.78 *15*	82 *18*	362.240	(2)⁻			
		1464.84 *9*	100 *12*	196.292	(1)⁻			
		1661.3 *3*	79 *18*	0.0	2⁻			
1714.714	0⁻,1⁻	573.27 *6*	3.4 *3*	1141.360	1⁻,2⁻			
		1518.39 *3*	100 *3*	196.292	(1)⁻			
1793.3	0⁻,1⁻,2⁻	1793.3 *3*	100	0.0	2⁻			
1915.52	(1,2)⁻	311.69 *3*	100 *6*	1603.83	(0⁻,1⁻,2⁻)			
		774.14 *6*	90 *13*	1141.360	1⁻,2⁻			
2231.761	1⁺	517.00 *8*	0.9 *3*	1714.714	0⁻,1⁻			
		570.57 *7*	1.7 *2*	1661.15	1⁻,2⁻			
		790.32 *7*	3.3 *3*	1441.51	(1,2⁻)			
		879.51 *19*	0.6 *2*	1352.494	1⁻,2⁻			
		1049.48 *12*	3.8 *3*	1182.090	(0,1,2)			
		1090.53 *12*	1.7 *4*	1141.360	1⁻,2⁻			
		1369.5 *2*	39.5 *16*	862.349	2⁻			
		2035.411 *18*	100 *3*	196.292	(1)⁻			
		2231.772 *21*	90.7 *18*	0.0	2⁻			
2392.147	1⁺	677.34 *5*	0.68 *4*	1714.714	0⁻,1⁻			
		731.01 *9*	0.10 *3*	1661.15	1⁻,2⁻			
		788.28 *4*	1.54 *4*	1603.83	(0⁻,1⁻,2⁻)			
		950.49 *12*	0.11 *3*	1441.51	(1,2⁻)			
		1039.59 *3*	1.40 *5*	1352.494	1⁻,2⁻			
		1179.51 *3*	2.88 *6*	1212.577	(1,2)⁻			
		1209.84 *8*	0.41 *7*	1182.090	(0,1,2)			
		1250.67 *4*	3.24 *6*	1141.360	1⁻,2⁻			
		1529.77 *3*	31.6 *5*	862.349	2⁻			

$^{88}_{37}Rb_{51}$-4

Adopted Levels, Gammas (continued)

γ(^{88}Rb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	Comments
2392.147	1$^+$	2029.84 *3*	13.09 *25*	362.240	(2)$^-$		
		2195.842 *7*	38.1 *3*	196.292	(1)$^-$		
		2364.7 *3*	0.09 *4*	27.515	(3)$^-$		
		2392.11 *4*	100.0 *3*	0.0	2$^-$		
2456.00	(0$^-$,1$^-$)	741.34[&] *18*	100 *30*	1714.714	0$^-$,1$^-$		
		2259.5[&] *3*	90 *40*	196.292	(1)$^-$		
2548.420	1$^+$	1303.09 *24*	9 *3*	1245.24	(2)$^-$		
		1335.81 *14*	9.0 *14*	1212.577	(1,2)$^-$		
		1406.94 *10*	30 *2*	1141.360	1$^-$,2$^-$		
		1685.6 *4*	91 *10*	862.349	2$^-$		
		2186.5 *3*	39 *8*	362.240	(2)$^-$		
		2352.08 *4*	100 *3*	196.292	(1)$^-$		
		2548.40 *3*	85.3 *14*	0.0	2$^-$		
2771.11	1$^+$	1908.7 *4*	67 *9*	862.349	2$^-$		
		2408.91 *7*	70 *7*	362.240	(2)$^-$		
		2771.02 *5*	100 *5*	0.0	2$^-$		
2924.4	(9$^+$)	1550.6[‡] *4*	100[‡]	1373.8	(7$^+$)	(Q)	Mult.: from $\gamma\gamma(\theta)$ in ^{208}Pb(^{18}O,F).
3192.0	(9$^+$)	1818.2[‡] *4*	[‡]	1373.8	(7$^+$)	(Q)	Mult.: from $\gamma\gamma(\theta)$ in ^{208}Pb(^{18}O,F).
3587.9	(10$^+$)	395.8[‡] *4*	100[‡] *21*	3192.0	(9$^+$)	(D)	Mult.: from $\gamma\gamma(\theta)$ in ^{208}Pb(^{18}O,F).
		663.6[‡] *5*	42[‡] *15*	2924.4	(9$^+$)		
3786.7		595[‡&] *1*		3192.0	(9$^+$)		
		862.3[‡] *4*		2924.4	(9$^+$)		
4242.9		655[‡] *1*	100[‡]	3587.9	(10$^+$)		
5009.0		1222.3[‡] *6*	100[‡]	3786.7			
5905.0		896[‡] *1*	100[‡]	5009.0			

[†] From ^{88}Kr β^- decay, except where noted.
[‡] From ^{208}Pb(^{18}O,F).
[#] From α(exp), α(K)exp in ^{88}Kr β^- decay, except where noted.
[@] Multiply placed.
[&] Placement of transition in the level scheme is uncertain.

$^{88}_{37}Rb_{51}$-5

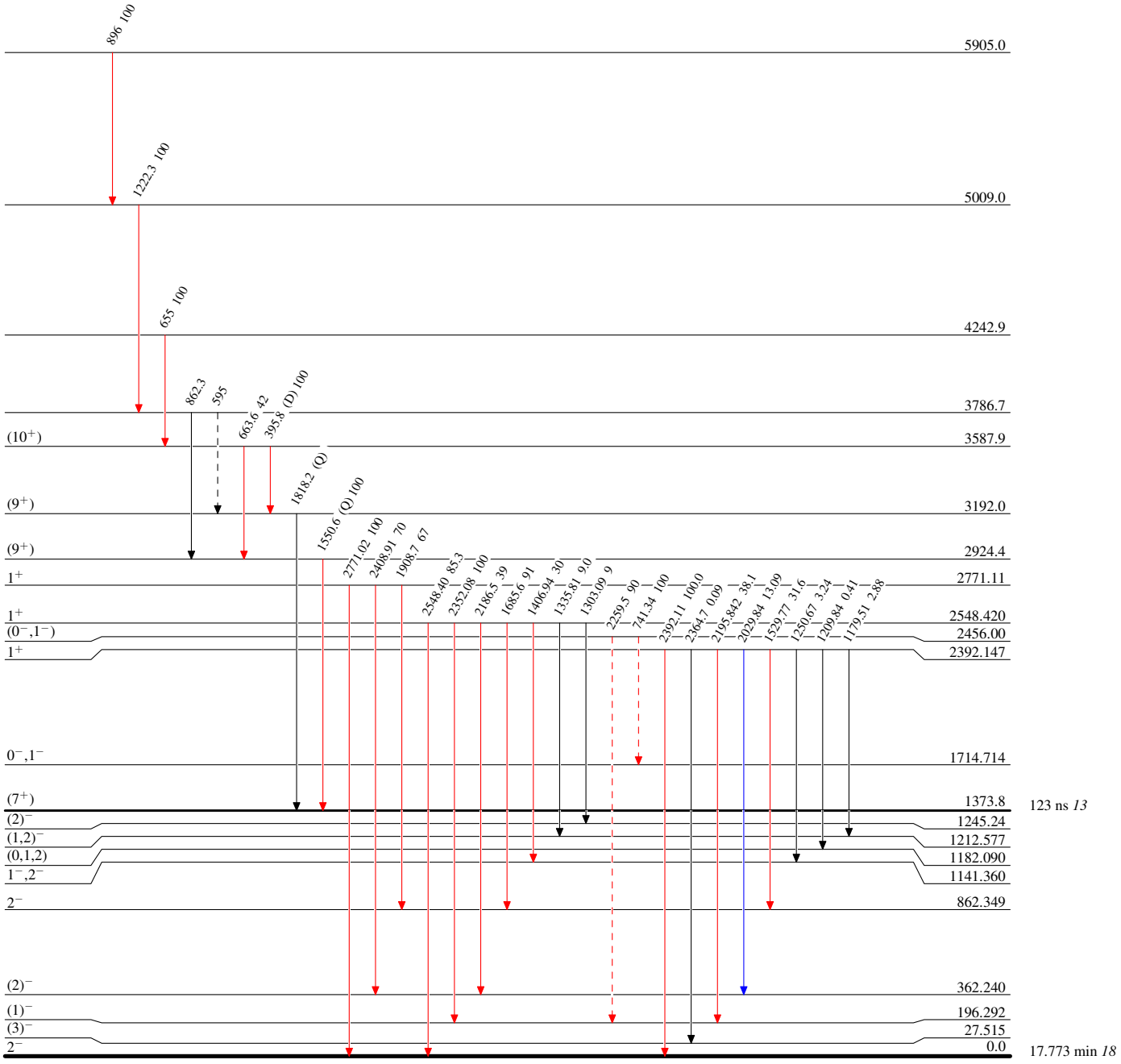
Adopted Levels, Gammas

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)

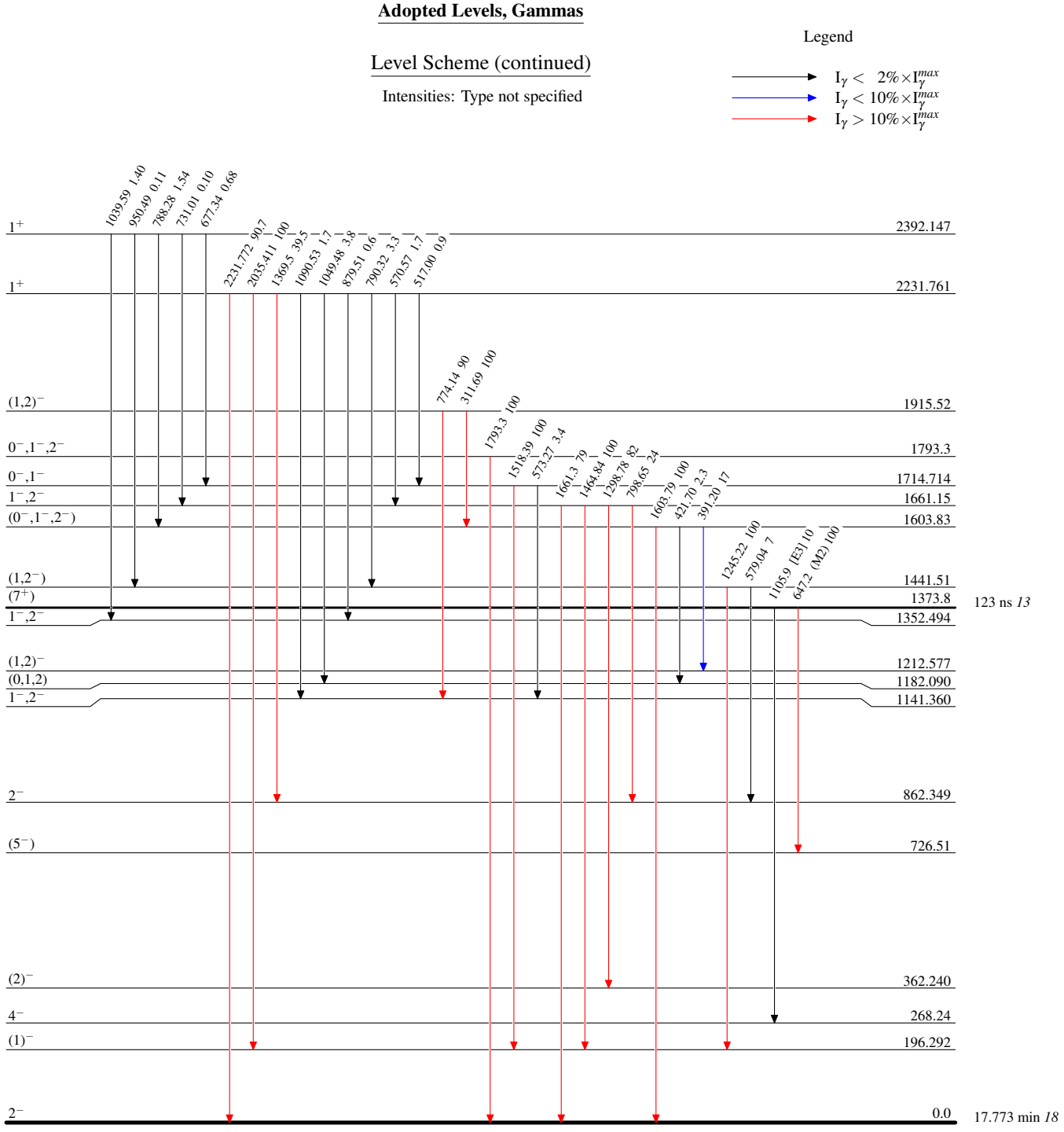


$^{88}_{37}Rb_{51}$

Adopted Levels, Gammas

Level Scheme (continued)

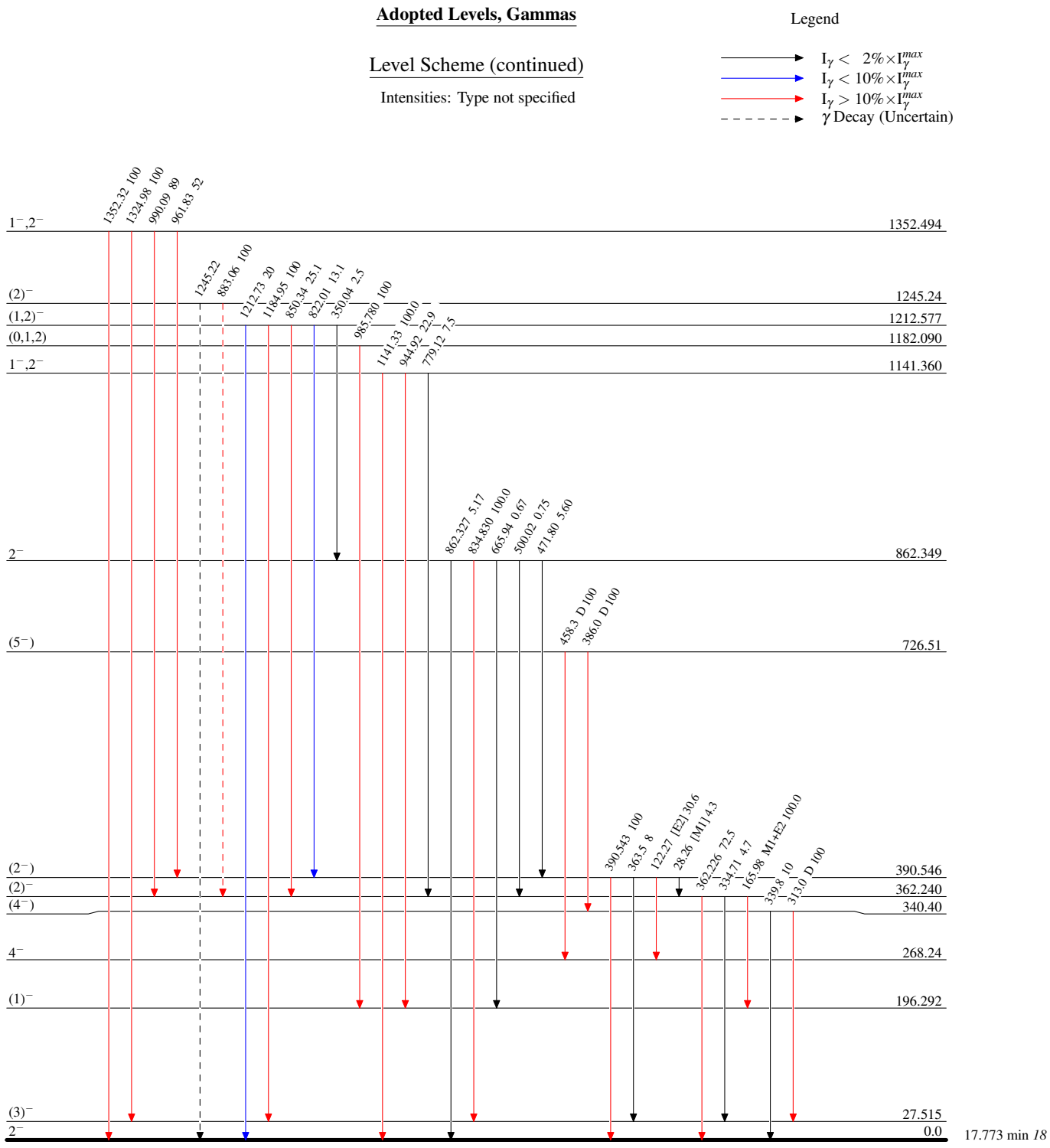
Intensities: Type not specified



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified

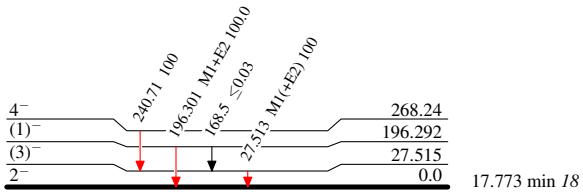


$^{88}_{37}Rb_{51}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified



$^{88}_{37}Rb_{51}$