Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 113,2187 (2012)	15-Sep-2012

Q(β^-)=6003 *7*; S(n)=5867 *4*; S(p)=14951 *5*; Q(α)=−7310 *5* 2012Wa38
Note: Current evaluation has used the following Q record 6003 7 *5867* 4 *14951* 4 −7310 4 2011AuZZ.
Q(β^-),S(n),S(p),Q(α): 5987 *10*, 5550 *60*, 14570 *70*, −7330 *50*, respectively, from 2003Au03.
Q(β^-n)=906 *9* (2011AuZZ).
For isotope shift data, see 1995Ke04.

^{92}Kr Levels

Cross Reference (XREF) Flags

A	^{92}Br β^- decay	D	^{248}Cm SF decay
B	^{93}Br β^-n decay	E	Coulomb excitation
C	^{235}U(n,Fγ) E=thermal	F	^{252}Cf SF decay

E(level)†	Jπ‡	$T_{1/2}$	XREF	Comments
0.0	0^+	1.840 s *8*	AB DEF	%β^-=100; %β^-n=0.0332 *25* $\Delta<r^2>(^{92}Kr-^{86}Kr)$=0.751; uncertainty is 0.005 (statistical only), 0.022 (systematic included), 0.139 (including uncertainties arising from evaluation of isotope shifts) (1995Ke04). For discussion of differential changes in $\Delta<r^2>$, see 1996Li25. Jπ: g.s. of even-even nucleus. $T_{1/2}$: from 1969Ca03. Other data: 1.92 s *7* (1965Pa14), 1.70 s *25* (1967Am04), 2.2 s *3* (1970Lu05). %β^-n: value recommended in evaluation by 1993Ru01; weighted average of 0.040 *7* (1969Ta04) and 0.0323 *26* (1975As05). $<r^2>^{1/2}$(charge)=4.273 fm *10* (2004An14).
769.1 *5*	2^+	≈5.0 ps	A DEF	Jπ: E2 769γ to 0^+. E consistent with that for first 2^+ state of even-even N=56 isotones in Sr, Mo and Ru (540, 787 and 837 keV, respectively). $T_{1/2}$: from preliminary B(E2)↑=0.21 (10%−15% uncertainty) from Coulomb excitation; see comment on 769γ..
1356.4 *9*	@		A	Jπ: 587γ to (2^+). 1989PfZZ suggest $J^\pi=(0^+)$ based on energy systematics.
1446.3 *6*	$(1,2^+)$#		A D F	Jπ: 1447γ to 0^+ g.s.; D 678γ to 2^+ 769. 1989PfZZ suggest $J^\pi=2^+$ based on energy systematics. If 358γ from 4^+ 1804 exists, $J^\pi=(2^+)$ would Be favored.
1804.0 *10*	4^+		A D F	Jπ: stretched E2 1035γ to 2^+ 769 level. 1989PfZZ suggest this level may be the expected 3^- state; however, that Jπ is ruled out by E2 1035γ to 2^+, 769 level.
1985.0 *13*	(4^+)@		D F	Jπ: 181γ to 4^+ 1804 level.
1994.2? *13*	@		A	
2019.4 *8*	@		A	
2046.6 *12*	@		A	
2066.2 *10*	$4^{(+)}$		D F	Jπ: stretched Q 1297γ to 2^+ 769.
2077.4 *9*	@		A	
2153.2 *8*	$(1,2^+)$#		A	
2164.3 *8*	@		A	
2350.8 *7*	$(1,2^+)$#		A	
2471.7 *9*			A	
2492.0 *12*	(6^+)		D F	
2587.2 *8*	$(1,2^+)$#		A	
2653.3 *14*	(6^+)		D F	
2684.1 *14*			F	
2699.0 *14*			F	

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Adopted Levels, Gammas (continued)

^{92}Kr Levels (continued)

E(level)[†]	Jπ[‡]	XREF	E(level)[†]	Jπ[‡]	XREF	E(level)[†]	Jπ[‡]	XREF
2820.9 *10*		A	3178.6 *11*	(6$^+$)	D F	4185.1 *16*		F
2836.0 *13*		D F	3286.0 *12*		A	4394.6 *16*		F
2875.3 *9*		A	3595.3 *13*		D F	4482.5 *7*	(1,2$^+$)[#]	A
3036.1 *12*	(6$^+$)	D F	3627.8 *11*	(8$^+$)	D F	4511.4 *12*		A
3073.7 *14*		F	3846.1 *13*	(8$^+$)	D F	4980.3 *17*	(12$^+$)	D F
3086.6 *10*		A	4054.5 *9*		A	5011.4 *12*		A
3114.9 *9*		A	4124.0 *16*		F	5078.8 *8*	(1,2$^+$)[#]	A
3172.4 *11*	(6$^+$)	D F	4175.8 *13*	(10$^+$)	D F			

[†] From least-squares fit to Eγ allowing 1 keV uncertainty in all Eγ data. Uncertainties are provided by authors for no Eγ data.
[‡] Values given without further comment are those proposed by 2011Li34 in ^{252}Cf SF decay based largely on regional systematics.
[#] Gammas to both 0$^+$ and (2$^+$) levels imply J^π=(1,2$^+$).
[@] In heavier even-even N=56 isotones, the lowest-energy excited 0$^+$ levels lie at 1682, 1582 and 1130, respectively, in Sr, Zr and Ru; 3$^-$ levels lie at 1926, 1897, 2018 and 2167, respectively, in Sr, Zr, Mo and Ru isotones. Among the ^{92}Kr levels with unknown J^π, the energy of the observed 1356 level most closely matches that expected for the 0$^+$ state. The energies of the 1985, 1994, 2019, 2047, 2077 and 2164 levels, none of which has a known γ feeding a 0$^+$ level, make them candidates for the expected 3$^-$ state.

γ(^{92}Kr)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	Comments
769.1	2$^+$	769.2	100	0.0	0$^+$	E2	B(E2)(W.u.)≈17 (2009MuZW) B(E2)(W.u.)≈17 (B(E2)≈0.042) is a preliminary value from Coulomb excitation; the uncertainty is 10-15%. Mult.: Q from ^{248}Cm SF decay; Coulomb excited transition.
1356.4		587.4	100	769.1	2$^+$		
1446.3	(1,2$^+$)	677.5	55	769.1	2$^+$	D	
		1446.6	100	0.0	0$^+$		
1804.0	4$^+$	358[&]	≤1.8	1446.3	(1,2$^+$)		Absent in ^{248}Cm SF decay.
		1035.3	100	769.1	2$^+$	E2	Mult.: from γγ(θ) and linear polarization in ^{248}Cm SF decay.
1985.0	(4$^+$)	181.1[@]	100	1804.0	4$^+$		
2019.4		573.0	62	1446.3	(1,2$^+$)		
		1250.0	100	769.1	2$^+$		
2046.6		1277.5	100	769.1	2$^+$		
2066.2	4$^{(+)}$	1296.7[@]	100	769.1	2$^+$	Q	
2077.4		631.0	6.4	1446.3	(1,2$^+$)		
		1308.5	100	769.1	2$^+$		
2153.2	(1,2$^+$)	1384.0	100	769.1	2$^+$		
		2153.4	12	0.0	0$^+$		
2164.3		717.8	80	1446.3	(1,2$^+$)		
		1395.2	100	769.1	2$^+$		
2350.8	(1,2$^+$)	994.4	20	1356.4			
		1581.8	73	769.1	2$^+$		
		2350.6	100	0.0	0$^+$		
2471.7		1026	6.7	1446.3	(1,2$^+$)		
		1702.0	100	769.1	2$^+$		
2492.0	(6$^+$)	507.0[@]		1985.0	(4$^+$)		
		688.1[@]		1804.0	4$^+$		
2587.2	(1,2$^+$)	593[&]		1994.2?			
		1818.5	100	769.1	2$^+$		

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Adopted Levels, Gammas (continued)

γ(^{92}Kr) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Comments
2587.2	(1,2$^+$)	2586.7	17	0.0	0$^+$	
2653.3	(6$^+$)	849.3#	100	1804.0	4$^+$	
2684.1		880.1#	100	1804.0	4$^+$	
2699.0		895.0#	100	1804.0	4$^+$	
2820.9		801.0	20	2019.4		
		1375.1	100	1446.3	(1,2$^+$)	
2836.0		1032.1@	100	1804.0	4$^+$	
2875.3		1429.0	5	1446.3	(1,2$^+$)	
		2106.2	100	769.1	2$^+$	
3036.1	(6$^+$)	1232.2@	100	1804.0	4$^+$	
3073.7		1269.7	100	1804.0	4$^+$	
3086.6		922.0	25	2164.3		
		1640.5	100	1446.3	(1,2$^+$)	
3114.9		1668.2	7.0	1446.3	(1,2$^+$)	
		2346.1	100	769.1	2$^+$	
3172.4	(6$^+$)	1106.0@		2066.2	4$^{(+)}$	
		1368.7@		1804.0	4$^+$	
3178.6	(6$^+$)	1112.3@		2066.2	4$^{(+)}$	
		1374.5#		1804.0	4$^+$	
3286.0		2516.9	100	769.1	2$^+$	
3595.3		759.4@	100	2836.0		
3627.8	(8$^+$)	32.6@		3595.3		E_γ: from level energy difference; transition shown in level scheme in fig. 4 of 2000Rz02, but energy not given.
		448.9		3178.6	(6$^+$)	Other Eγ: 448.3 from ^{252}Cf SF decay.
		455.3@		3172.4	(6$^+$)	Other Eγ: 454.6 from ^{252}Cf SF decay.
		591.8@		3036.1	(6$^+$)	Other Eγ: 590.3 from ^{252}Cf SF decay.
		1135.9@		2492.0	(6$^+$)	Other Eγ: 1134.4 from ^{252}Cf SF decay.
3846.1	(8$^+$)	810.0@		3036.1	(6$^+$)	
		1192.7@		2653.3	(6$^+$)	
4054.5		2607.5	100	1446.3	(1,2$^+$)	
		3286.0	100	769.1	2$^+$	
4124.0		1288.0#	100	2836.0		
4175.8	(10$^+$)	329.8@		3846.1	(8$^+$)	Other Eγ: 330.4 from ^{252}Cf SF decay.
		548.0@		3627.8	(8$^+$)	Other Eγ: 549.7 from ^{252}Cf SF decay.
4185.1		1149.0#	100	3036.1	(6$^+$)	
4394.6		1358.5#	100	3036.1	(6$^+$)	
4482.5	(1,2$^+$)	3036.0	33	1446.3	(1,2$^+$)	
		3713.0	33	769.1	2$^+$	
		4483.0	100	0.0	0$^+$	
4511.4		3742.3	100	769.1	2$^+$	
4980.3	(12$^+$)	804.5@	100	4175.8	(10$^+$)	
5011.4		3565.0	100	1446.3	(1,2$^+$)	
5078.8	(1,2$^+$)	3633.0	50	1446.3	(1,2$^+$)	
		5078.0	100	0.0	0$^+$	

† From ^{92}Br β^- decay, except as noted.
‡ From $\gamma\gamma(\theta)$ in ^{248}Cm SF decay.
# From ^{252}Cf SF decay.

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Adopted Levels, Gammas (continued)

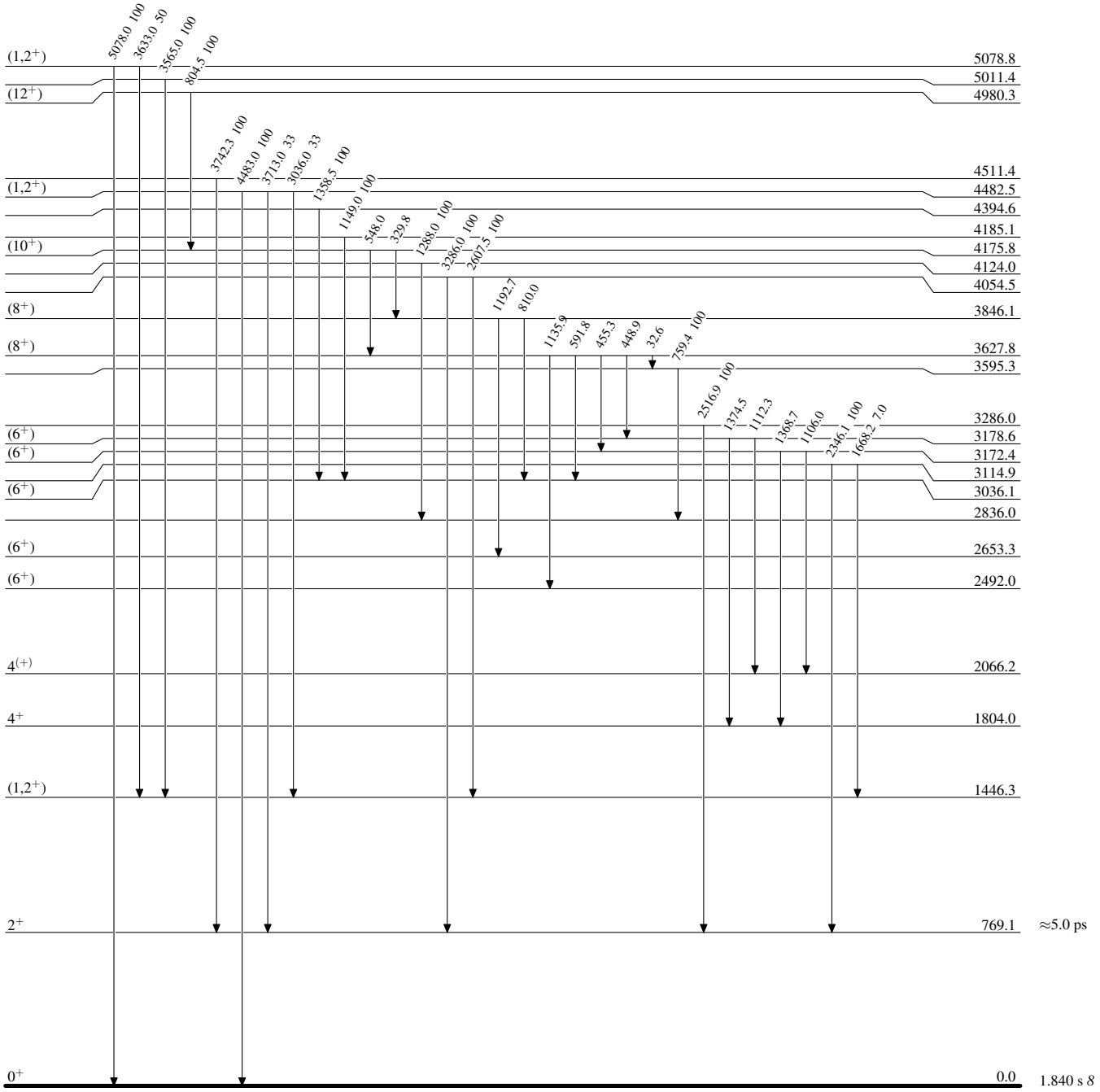
$\gamma(^{92}Kr)$ (continued)

@ From ^{248}Cm SF decay.
& Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{92}_{36}Kr_{56}$

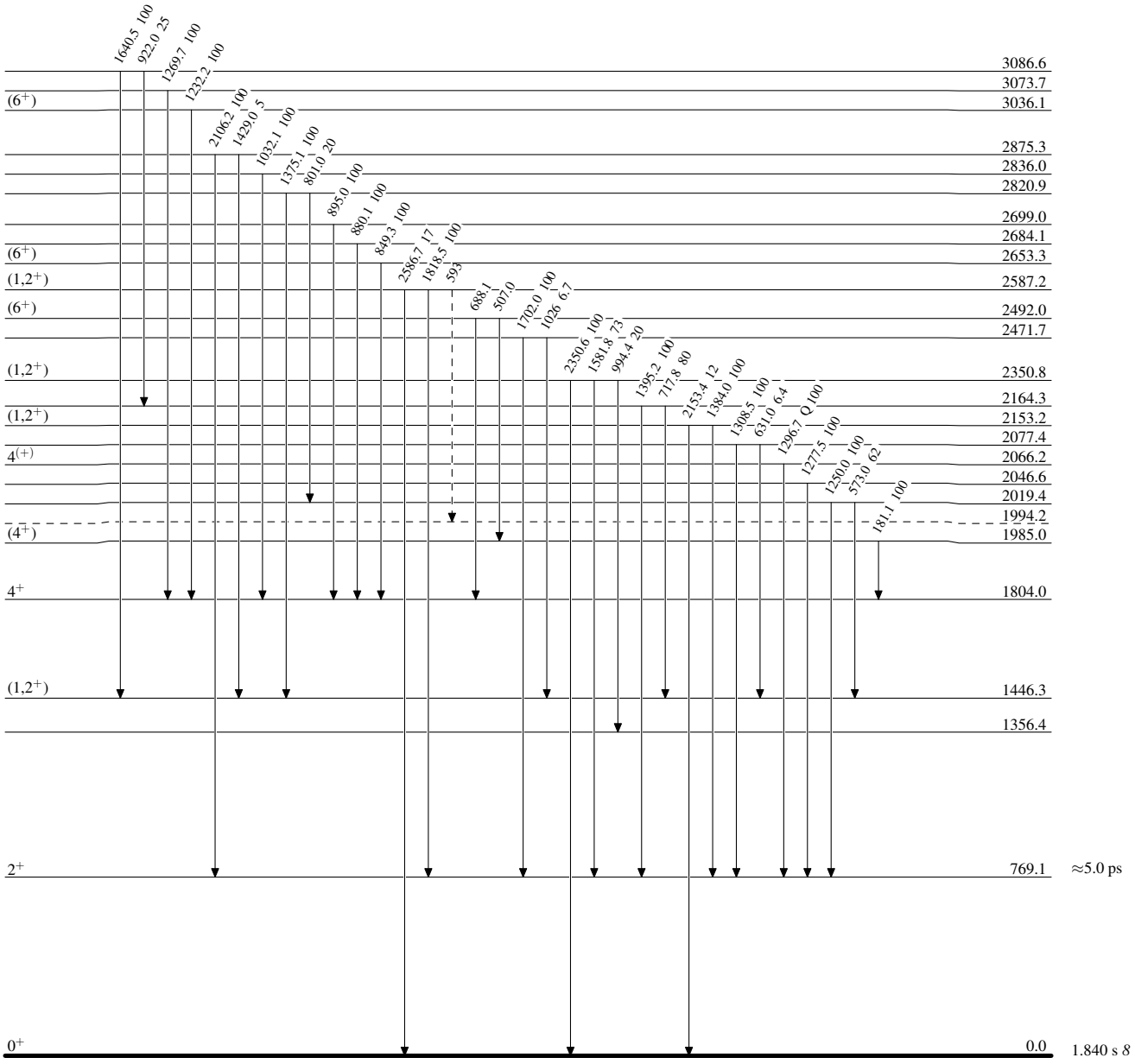
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{92}_{36}Kr_{56}$

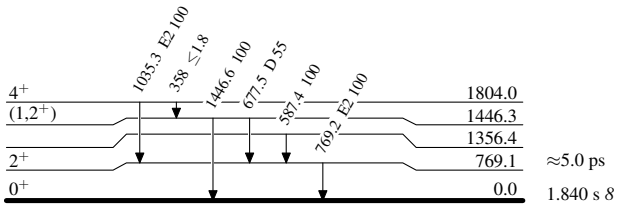
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{92}_{36}Kr_{56}$