^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 135, 193 (2016)	31-May-2016

Includes (α,nγ) from 1983Ka03, and several other secondary references.

1990Sc07 (and 1988Wi01): ^{77}Se(α,2nγ) E=27 MeV and ^{78}Se(α,3nγ) E=45 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma(\theta)$, γ(lin pol), lifetimes by DSA methods. Longer lifetimes were measured by RDDS and γ(t) pulsed-beam techniques in (α,2nγ) reaction. Selected lifetimes were reported by 1988Wi01.

1983Ka03: ^{76}Se(α,nγ) E=9-18 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma(\theta)$, nγ coin, excitation functions.

1982Be48: ^{78}Se(α,3nγ) E=45 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma(\theta)$, excitation functions.

Others:

1986ZhZW, 1985ZhZX: ^{76}Se(α,nγ) E=16 MeV. Measured lifetimes by RDDS (1986ZhZW) and DSA (1985ZhZX) methods.

1982IrZZ, 1980IrZZ: ^{76}Se(α,nγ), E=12 MeV; ^{75}As(^{7}Li,3nγ), E=24 MeV. Measured γ-spectra, $\gamma\gamma$.

1977InZW, 1975InZZ, 1975FoZW, 1971AnZU: ^{76}Se(α,nγ) E=14 MeV and ^{78}Se(α,3nγ) E=45 MeV. Measured Eγ, $\gamma\gamma$, $\gamma(\theta)$. Two negative-parity and one-positive parity bands (with a total of about 14 levels) were proposed in these reports.

1974SaYY: ^{77}Se(α,2nγ). Measured Eγ, $\gamma\gamma$, $\gamma(\theta)$, lifetimes by DSA method. No details are available.

1970McZZ: Se(α,nγ) E=20-65 MeV. Measured Eγ, $\gamma(\theta)$. No details are available.

^{79}Kr Levels

The level scheme is from 1990Sc07 which is an extension of schemes proposed earlier by 1975FoZW (also 1975InZZ,1971AnZU), 1982Be48, 1983Ka03 and 1982IrZZ.

Band assignments are mainly from 1990Sc07. Three main bands were proposed earlier by 1983Ka03, 1982Be48 and 1975FoZW.

E(level)[†]	J$^{\pi}$[@]	T$_{1/2}$	Comments
0.0[a]	1/2$^-$		
129.74[d] *8*	7/2$^+$	50 s *3*	%IT=100 T$_{1/2}$: from Adopted Levels.
147.08[b] *8*	5/2$^-$		
148.83[c] *10*	9/2$^+$		
182.82[a] *7*	3/2$^-$	0.21 ns *10*	T$_{1/2}$: from γ(t) (pulsed beam) (1990Sc07). Other: 0.52 ns *10* (1986ZhZW).
290.41 *10*	5/2$^+$	0.62 ns *14*	T$_{1/2}$: from 143γ(t) (pulsed beam) (1990Sc07). Other: 0.21 ns *7* (1986ZhZW). It should be noted that value of 0.21 ns (1986ZhZW) for 290 level agrees with 0.21 ns (1990Sc07) for 183 level and 0.52 ns (1986ZhZW) for 183 level agrees with 0.62 ns (1990Sc07) for 290 level.
384.15[h] *14*	3/2$^-$	21 ps *8*	J$^{\pi}$: 1983Ka03 suggest 1/2$^-$ which is inconsistent with $\gamma(\theta)$. T$_{1/2}$: RDDS for 384γ (1990Sc07).
401.98[a] *8*	5/2$^-$	33 ps *5*	T$_{1/2}$: RDDS for 219γ and 402γ (1990Sc07). Other: 17 ps *5* (1986ZhZW).
449.96[b] *7*	7/2$^-$	51 ps *10*	T$_{1/2}$: RDDS for 302γ and 320γ (1990Sc07). Other: 35 ps *10* (1986ZhZW).
533.2[&] *4*	1/2$^+$		
636.0 *7*	5/2$^+$	10 ps +*7*−*4*	T$_{1/2}$: RDDS for 487γ (1986ZhZW).
659.34[h] *13*	(5/2)$^-$		J$^{\pi}$: excitation function data (1983Ka03) suggest 3/2 but are inconsistent with $\gamma(\theta)$.
673.00 *15*	7/2$^{(+)}$		
687.5[‡] *6*	3/2$^+$		
694.97[a] *10*	(7/2)$^-$	5.5 ps *21*	T$_{1/2}$: RDDS for 293γ (1990Sc07). Other: 7 ps +*7*−*4* (1986ZhZW).
752.06 *13*	5/2$^+$	21 ps +*7*−*4*	T$_{1/2}$: RDDS for 622γ (1986ZhZW).
810.1[#] *10*	1/2$^-$		J$^{\pi}$: 426$\gamma(\theta)$ not consistent with 1/2.
814.27[b] *9*	9/2$^-$	4.2 ps *14*	T$_{1/2}$: RDDS for 667γ (1990Sc07). Other: 4.2 ps *14* (1986ZhZW).
836.1[&] *8*	(3/2)		
896.61[d] *11*	11/2$^+$	1.50 ps *16*	T$_{1/2}$: DSA for 748γ and 767γ. Weighted average of 1.39 ps *28*, 1.59 ps *21* (1988Wi01) and 1.25 ps *63* (1985ZhZX). Other: 1.2 ps *6* (RDDS for 748γ, 1986ZhZW).

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^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48 (continued)

^{79}Kr Levels (continued)

E(level)[†]	Jπ[@]	$T_{1/2}$	Comments
907.4[‡] *6*	(3/2,5/2⁻)		
958.19 *16*	(9/2⁺)	7 ps *+7−4*	$T_{1/2}$: RDDS for 285γ (1986ZhZW).
975.86[c] *12*	(13/2)⁺	1.98 ps *12*	$T_{1/2}$: DSA for 827γ. Weighted average of 1.87 ps *21*, 2.22 ps *21* (1988Wi01); 1.94 ps *35* (1985ZhZX) and 1.87 ps *21* (RDDS,1982Pa20). Other: 1.7 ps *6* (1986ZhZW).
983.76[h] *14*	(7/2)⁻	6 ps *3*	$T_{1/2}$: RDDS for 582γ (1986ZhZW).
1038.83[g] *24*	(11/2)⁺		a 655γ from this level is suggested by 1982IrZZ but ΔJ=4 makes it unlikely.
1063.54[a] *10*	9/2⁻	2.1 ps *7*	$T_{1/2}$: RDDS for 661γ (1986ZhZW). Others:<3 ps (1990Sc07). DSA results give>0.7 ps (1990Sc07) and>1.4 ps (1985ZhZX).
1078.71 *22*	(5/2⁺,7/2)		
1131.7[‡] *7*	(3/2,5/2⁻)		
1171.47[b] *10*	11/2⁻	2.8 ps *7*	$T_{1/2}$: RDDS for 721γ (1990Sc07). Other: 1.7 ps *+7−4* (1986ZhZW).
1200.4[f] *6*		0.55 ps *14*	$T_{1/2}$: DSA for 798γ (1985ZhZX).
1299.1[‡] *8*	(5/2⁺)	0.49 ps *14*	$T_{1/2}$: DSA for 1170γ (1985ZhZX).
1333.8?[f] *10*			
1363.20[h] *19*	(9/2⁻)		
1428.4[‡] *7*	(5/2⁺)	0.42 ps *14*	$T_{1/2}$: DSA for 792γ (1985ZhZX).
1450.61[a] *13*	(11/2⁻)	1.2 ps *4*	$T_{1/2}$: DSA for 756γ (1990Sc07). Other: 1.2 ps *+5−3* (1985ZhZX).
1502.2?[f] *11*			
1507.8 *4*	(9/2,11/2)		
1549.8?[f] *10*			
1568.2[f] *10*		0.42 ps *14*	$T_{1/2}$: DSA for 1184γ (1985ZhZX).
1598.4?[f] *10*			
1606.4?[f] *10*			
1662.10[g] *18*	(13/2⁺)		
1662.15[b] *13*	(13/2)⁻	0.77 ps *18*	$T_{1/2}$: DSA for 848γ. Weighted average of 2.8 ps *14*, 0.83 ps *28* (1990Sc07) and 0.69 ps *21* (1985ZhZX).
1707.4 *10*	(5/2⁺,7/2)	0.28 ps *7*	Level from 1985ZhZX. $T_{1/2}$ from DSA for 1417γ (1985ZhZX).
1803.2?[#] *11*			
1850.6?[#] *10*	(13/2)		
1884.37[d] *17*	15/2⁺	0.34 ps *3*	$T_{1/2}$: DSA for 909γ and 988γ. Weighted average of 0.32 ps *4*, 0.35 ps *4* (1988Wi01); 0.35 ps *14*, 0.49 ps *14* (1985ZhZX).
1915.76[a] *15*	13/2⁻	0.81 ps *18*	$T_{1/2}$: DSA for 852γ. Weighted average of 1.4 ps *6*, 0.76 ps *35* (1990Sc07) and 0.76 ps *21* (1985ZhZX).
2001.86[c] *18*	(17/2)⁺	0.55 ps *5*	$T_{1/2}$: DSA for 1026γ. Weighted average of 0.65 ps *6*, 0.51 ps *5*, 0.52 ps *5* (1988Wi01); 0.49 ps *14*, 0.76 ps *28* (1985ZhZX) and 0.62 ps *21* (RDDS,1982Pa20).
2056.67[b] *16*	15/2⁻	0.61 ps *5*	$T_{1/2}$: DSA for 885γ. Weighted average of 0.69 ps *7*, 0.55 ps *7*, 0.55 ps *14* (1990Sc07) and 0.55 ps *+21−14* (1985ZhZX).
2135.6[g] *4*	(15/2⁺)		
2415.54[a] *18*	(15/2⁻)	0.62 ps *14*	$T_{1/2}$: DSA for 965γ (1990Sc07).
2643.06[b] *20*	(17/2)⁻	0.83 ps *21*	$T_{1/2}$: DSA for 981γ (1990Sc07).
2857.02[e] *24*	(17/2⁻)	1.2 ps *+8−6*	$T_{1/2}$: DSA for 941γ (1990Sc07).
2930.21[a] *18*	(17/2)⁻	0.8 ps *4*	$T_{1/2}$: DSA for 1014γ (1990Sc07).
2978.9[d] *3*	(19/2)⁺	0.21 ps *4*	$T_{1/2}$: DSA for 977γ and 1094γ (1988Wi01).
3061.60[b] *23*	19/2⁻	0.69 ps *21*	$T_{1/2}$: DSA for 1005γ (1990Sc07).
3145.7[c] *3*	(21/2)⁺	0.30 ps *6*	$T_{1/2}$: DSA for 1144γ. Weighted average of 0.36 ps *4*, 0.21 ps *4*, 0.22 ps *4* (1988Wi01); 0.55 ps *14* (1985ZhZX) and 0.32 ps *11* (RDDS,1982Pa20).
3214.40[e] *19*	19/2⁻	1.9 ps *+12−11*	$T_{1/2}$: DSA for 1158γ (1990Sc07).

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^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48 (continued)

^{79}Kr Levels (continued)

E(level)[†]	J$^\pi$[@]	$T_{1/2}$	Comments
3288.6[g] *11*	(19/2$^+$)		
3383.1[a] *4*	(19/2$^-$)		
3585.60[e] *20*	(21/2)$^-$	0.7 ps *+6−4*	$T_{1/2}$: DSA for 943γ (1990Sc07).
3618.5[f] *3*	(21/2$^+$)	0.49 ps *14*	$T_{1/2}$: DSA for 473γ (1988Wi01).
3655.1[b] *4*	(21/2)$^-$	0.55 ps *21*	$T_{1/2}$: DSA for 1012γ (1990Sc07).
3845.7[f] *3*	(23/2)$^+$	0.21 ps *7*	$T_{1/2}$: DSA for 700γ (1988Wi01).
4087.6[b] *3*	(23/2$^-$)	0.42 ps *21*	$T_{1/2}$: DSA for 1025γ (1990Sc07).
4133.1[e] *3*	(23/2$^-$)		
4299.3[f] *3*	(25/2$^+$)	0.24 ps *4*	$T_{1/2}$: DSA for 454γ and 1154γ (1988Wi01).
4708.1?[b] *11*	(25/2$^-$)		
4899.3[f] *4*	(27/2$^+$)	0.21 ps *7*	$T_{1/2}$: DSA for 600γ and 1054γ (1988Wi01).
5523.5?[f] *5*			

[†] From least-squares fit to Eγ data.
[‡] From 1982IrZZ only. Level supported by other studies such as ^{79}Rb ε decay and (p,nγ) reactions.
[#] From 1983Ka03 only. Treated as uncertain by the evaluator.
[@] Primarily from $\gamma(\theta)$ data and probable band assignments (1990Sc07,1983Ka03,1982Be48,1975FoZW). See Adopted Levels also.
[&] From 1983Ka03 and 1982IrZZ, not reported by 1990Sc07 and 1982Be48.
[a] Band(A): ν1/2[301] band.
[b] Band(B): ν5/2[303] band.
[c] Band(C): ν5/2[422] band, α=+1/2.
[d] Band(D): ν5/2[422] band, α=−1/2.
[e] Band(E): ΔJ=1, 3-quasiparticle band.
[f] Band(F): ΔJ=1, 3-quasiparticle band. configuration=$\nu g_{9/2}\pi g^2_{9/2}$.
[g] Band(G): K$^\pi$=(11/2$^+$) band.
[h] Band(H): K$^\pi$=3/2$^-$ band.

^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48 (continued)

$\gamma(^{79}Kr)$

A_2, A_4 and pol (lin pol) values are from (α,3nγ) reaction (1990Sc07), unless otherwise stated. A_2 and A_4 values are also available from 1983Ka03 and 1982Be48. Two polarization values are given from 1990Sc07, first is from (α,2nγ) and the second is from (α,3nγ) reaction.
All placements are based on $\gamma\gamma$ coin data of several papers mentioned above.

γ-ray intensities from different reactions

Eγ keV	Iγ ^{78}Se(α,3nγ) E=45 MeV 1990Sc07	Iγ ^{76}Se(α,nγ) E=17 MeV 1983Ka03
129.8	62 2 (#)	
143.4	5.0 2 (#)	19.5 5
147.1	42 1 (#)	69.8 21
160.8	2.6 1 (#)	14.2 3
182.8	27.2 6 (#)	74.8 17
201	≈0.5	
219.2	13.2 2 (#)	31.3 10
227.2	0.8 1	
267.1	2.1 1 (#)	2.6 2
275.2	3.5 1	7.1 3
284.2+285.2	2.9 1	4.9 3
293.0	10.3 3 (#)	16.3 4
302.9	30.5 4 (#)	
320.2	13.4 2 (#)	20.5 5
324.3		1.0 2
350.5		3.8 2
357+357.2	3.2 1 (#)	
364.3	3.1 1	4.5 2
368.6	3.9 1 (#)	6.3 2
371.2	5.8 1	
382.7	6.8 1	
384.2	3.8 1	29.4 20
387.1	1.2 1 (#)	
401.9	13.5 2 (#)	41.7 7
426.0		1.7 2
452.0		3.4 2
453.6	3.7 2	
465.1	≈1	
472.8	≈4	
476.5	2.1 4	5.5 2
490.7	1.0 1	
502.1	≈2	
506.0		16.0 5
512.2	≈12 (#)	
524+524.2	7.3 4	15.9 5
533.3		4.6 2
544.0		10.0 3

$^{79}_{36}Kr_{43}$-4

Eγ keV	Iγ ^{78}Se(α,3nγ) E=45 MeV 1990Sc07	Iγ ^{76}Se(α,nγ) E=17 MeV 1983Ka03
547.5	2.7 1	
569.2	1.4 1	
571.4	≈2	
581.8	2.4 1	7.5 4
599.6+600.2	6.4 5	
613.7	≈4	
622.2+623.3	5.3 2	16.2 4
655.5	2.2 1	
661.5	16.8 5 (#)	35.4 15
667.2	25.3 3 (#)	50.0 10
684.5+686.2	6.1 2	8.2 8
700.0	13.3 10	
721.5	39.0 4 (#)	52.4 6
744.3	3.3 2	
747.8	19.6 3 (#)	50.4 10
755.6	10.0 2 (#)	21.3 6
758.8	1.5 1	
765.3+765.5	6.4 4 (#)	20.3 20
766.8	3.7 2 (#)	
787.7		4.3 3
800.3	≈2.5	
809.3	11.3 2	
827.0	100.0 13 (#)	100.0
835.1		14.8 7
847.8	≈25 (#)	32.1 10
852.1	≈16 (#)	26.3 10
866.8	0.7 1	
873.7	2.1 1	
885.2	31 1 (#)	24.0 5
889.9	16.5 6	29.6 10
908.7+909	15.2 4	29.0 10
941.5+942.7	9.8 2	
965.0	8.5 3	7.6 4
967.6	6.4 2	
977.3	6.7 2	
980.8	22.9 5 (#)	6.9 5
987.7	6.9 2	5.0 10
1004.8	29.6 8 (#)	< 1.0
1012.0	12.7 5	
1014.4	14 2	
1022.9	13.6 5	
1025.5+1025.9	81 2 (#)	25.0 10
1059.6	3.6 3	
1071.3	1.5 2	
1080.8	2.9 2	
1094.1	2.9 2	
1096.6	5.4 2	

$^{79}_{36}Kr_{43}$-5

		1143.8	39 2	(#)	< 1.0				
		1153+1153.6	15.6 5						
		1157.6	10.6 4						
		1160.0	5.4 3						
		1212.4	3.1 2						
		1224	2.3 2						
		1513.3	1.3 3						

(#) value also available from 1982Be48 who claim the intensities are from ^{78}Se(α,3nγ) E=45. However, large differences are found (by as much as factor of 3) when compared to values from 1990Sc07 for the same reaction. This comparison shows that values given by 1982Be48 are closer in agreement with those from ^{77}Se(α,2nγ) E=27 MeV reaction as given by 1990Sc07 and in the dataset here.

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	α[e]	Comments
19.1 *1*	≈10	148.83	9/2$^+$	129.74	7/2$^+$	(M1)		15.2 *4*	A_2=−0.70 *7* α(K)=13.4 *3*; α(L)=1.54 *4*; α(M)=0.251 *6* α(N)=0.0249 *6* I_γ: from intensity balance at 149 level, assuming mult(19.1γ)=M1. 1990Sc07 give Iγ=44 *3* which is too large to explain the intensity balance at 149 and 130 levels. Mult.: from $\gamma(\theta)$ and ΔJ^π.
79.3 *1*	0.7 *2*	975.86	(13/2)$^+$	896.61	11/2$^+$	(D)			A_2=−0.34 *11*
117.5 *1*	0.2 *1*	2001.86	(17/2)$^+$	1884.37	15/2$^+$	D			A_2=−0.8 *5*
129.8 *1*	96 *7*	129.74	7/2$^+$	0.0	1/2$^-$	E3		2.63	A_2=−0.01 *1*; A_4=+0.03 *2* α(K)=2.08 *3*; α(L)=0.470 *7*; α(M)=0.0768 *12* α(N)=0.00648 *10* Mult.: from Adopted Gammas.
143.4 *1*	11 *1*	290.41	5/2$^+$	147.08	5/2$^-$	E1		0.0310	A_2=+0.18 *3*; A_4=+0.07 *5* (1990Sc07) A_2=+0.34 *3*; A_4=−0.18 *4* (1983Ka03) α(K)=0.0275 *4*; α(L)=0.00295 *5*; α(M)=0.000475 *7* α(N)=4.71×10^{-5} *7* POL=−0.5 *5*, +0.2 *7* (1990Sc07). δ=+1.96 *45* from 1983Ka03 is uncertain since it is inconsistent with RUL for M2 which requires δ<0.01.
147.1 *1*	63 *6*	147.08	5/2$^-$	0.0	1/2$^-$	E2		0.222	A_2=+0.06 *1*; A_4=+0.04 *2* A_2=+0.17 *4*; A_4=−0.12 *4* (1983Ka03) α(K)=0.193 *3*; α(L)=0.0252 *4*; α(M)=0.00406 *6* α(N)=0.000381 *6* POL=+0.09 *13*, +0.41 *11* (1990Sc07).
155[af]		687.5	3/2$^+$	533.2	1/2$^+$				
159.7 *2*	0.8 *2*	449.96	7/2$^-$	290.41	5/2$^+$				
160.8 *2*	6.6 *8*	290.41	5/2$^+$	129.74	7/2$^+$	M1+E2	+0.29 *10*	0.045 *7*	A_2=−0.41 *5*; A_4=−0.07 *13* (1990Sc07)

$^{79}_{36}Kr_{43}$-6

^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48 (continued)

$\gamma(^{79}Kr)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	α[e]	Comments
									A_2=−0.34 *2*; A_4=−0.065 *20* (1983Ka03) α(K)=0.040 *6*; α(L)=0.0046 *8*; α(M)=0.00075 *13* α(N)=7.4×10^{-5} *12* δ: from $\gamma(\theta)$ (1983Ka03). Other: 0.4 (1990Sc07).
182.8 *1*	42 *6*	182.82	3/2$^-$	0.0	1/2$^-$	M1(+E2)	0.00 *2*	0.0256	A_2=−0.12 *1*; A_4=+0.01 *3* A_2=−0.20 *2*; A_4=+0.01 *3* α(K)=0.0227 *4*; α(L)=0.00250 *4*; α(M)=0.000405 *6* α(N)=4.07×10^{-5} *6* POL=−0.39 *13*, −0.13 *9*. δ(E2/M1)=+0.03 *5* (1982Be48).
201 *1*	≈1[c]	384.15	3/2$^-$	182.82	3/2$^-$				
219.2 *1*	20 *3*	401.98	5/2$^-$	182.82	3/2$^-$	M1+E2	+0.07 *3*	0.0162 *3*	A_2=−0.12 *2*; A_4=+0.02 *3* A_2=−0.22 *4*; A_4=−0.03 *5* (1982Be48) A_2=−0.126 *25*; A_4=−0.01 *3* (1983Ka03) α(K)=0.0143 *3*; α(L)=0.00157 *3*; α(M)=0.000255 *5* α(N)=2.57×10^{-5} *5* POL=−0.42 *9*, −0.30 *15*. Other δ=0.00 *4* (1982Be48).
227.2 *1*	0.5 *1*	3845.7	(23/2)$^+$	3618.5	(21/2$^+$)	D			A_2=−0.54 *14*; A_4=−0.10 *22* A_2, A_4 from (α,2nγ).
237[af]		384.15	3/2$^-$	147.08	5/2$^-$				
257[af]		659.34	(5/2)$^-$	401.98	5/2$^-$				
267.1 *1*	2.4 *4*	449.96	7/2$^-$	182.82	3/2$^-$	E2		0.0255	A_2=+0.24 *6*; A_4=+0.12 *11* A_2=+0.21 *9*; A_4=−0.15 *9* (1983Ka03) α(K)=0.0224 *4*; α(L)=0.00262 *4*; α(M)=0.000424 *6* α(N)=4.12×10^{-5} *6*
275.2 *1*	2.8 *4*	659.34	(5/2)$^-$	384.15	3/2$^-$	D(+Q)	0.00 *5*		A_2=−0.14 *3*; A_4=+0.06 *5* (1990Sc07) A_2=−0.41 *4*; A_4=−0.02 *4* (1983Ka03)
284.2 *1*	1.3 *2*	3214.40	19/2$^-$	2930.21	(17/2)$^-$	M1+E2	−0.10 *6*	0.00845 *22*	A_2=−0.44 *6*; A_4=−0.06 *10* α(K)=0.00749 *20*; α(L)=0.000815 *23*; α(M)=0.000132 *4* α(N)=1.33×10^{-5} *4*
285.2 *1*	2.5 *4*	958.19	(9/2$^+$)	673.00	7/2$^{(+)}$	M1+E2	−0.24 *7*	0.0089 *5*	A_2=−0.45 *5*; A_4=0.00 *9* A_2=−0.51 *5*; A_4=−0.01 *5* (1983Ka03) α(K)=0.0079 *4*; α(L)=0.00086 *5*; α(M)=0.000140 *8* α(N)=1.41×10^{-5} *7* A_2, A_4 from (α,2nγ).
293.0 *1*	9.6 *14*	694.97	(7/2)$^-$	401.98	5/2$^-$	M1+E2	+0.13 *5*	0.00790 *20*	A_2=−0.13 *2*; A_4=−0.01 *3* A_2=−0.29 *6*; A_4=−0.05 *7* (1982Be48) A_2=−0.14 *3*; A_4=−0.02 *3* (1983Ka03) α(K)=0.00700 *17*; α(L)=0.000762 *20*; α(M)=0.000123 *4* α(N)=1.24×10^{-5} *4* POL=−0.40 *14*, +0.17 *19*. δ=+0.02 *3* (1982Be48).

$^{79}_{36}Kr_{43}$-7

^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48 (continued)

γ(^{79}Kr) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	α[e]	Comments
301.1 *2*	≈4[c]	449.96	7/2⁻	148.83	9/2⁺				
302.9 *1*	37 *5*	449.96	7/2⁻	147.08	5/2⁻	M1+E2	+0.69 *4*	0.0101 *3*	A_2=+0.49 *1*; A_4=+0.09 *2* A_2=+0.35 *5*; A_4=+0.03 *7* (1982Be48) α(K)=0.00894 *25*; α(L)=0.00100 *3*; α(M)=0.000162 *5* α(N)=1.61×10^{-5} *5* POL=−0.26 *6*, −0.27 *7*. Values of linear pol coefficients calculated from A_2 $ A_4 and δ are −0.61 *6*, −0.59 *5*, which disagree with the experimental values. δ=+2.2 *18* (1982Be48).
320.2 *1*	15 *2*	449.96	7/2⁻	129.74	7/2⁺	E1		0.00309	A_2=+0.17 *3*; A_4=+0.05 *5* A_2=+0.19 *6*; A_4=+0.04 *7* (1982Be48) A_2=+0.24 *2*; A_4=−0.05 *2* (1983Ka03) α(K)=0.00275 *4*; α(L)=0.000293 *5*; α(M)=4.72×10^{-5} *7* α(N)=4.74×10^{-6} *7* POL=−0.36 *8*, −0.06 *12*. δ=0.0 *2* (1982Be48).
324.4 *1*	0.7 *1*	983.76	(7/2)⁻	659.34	(5/2)⁻	M1+E2[d]		0.0095 *35*	A_2=−0.60 *11*; A_4=+0.24 *22* α(K)=0.0084 *31*; α(L)=9.4×10^{-4} *37*; α(M)=1.53×10^{-4} *60* α(N)=1.51×10^{-5} *57* A_2, A_4 from (α,2nγ).
350.5[@] *5*		533.2	1/2⁺	182.82	3/2⁻				A_2=+0.08 *4*; A_4=−0.03 *4* (1983Ka03) I_γ: 3.8 *2* (1983Ka03).
357 *1*	≈1[c]	3214.40	19/2⁻	2857.02	(17/2⁻)	*d*			A_2=−0.05 *7*; A_4=−0.06 *10* A_2, A_4 For 357γ+357.2γ.
357.2 *3*	≈2[c]	1171.47	11/2⁻	814.27	9/2⁻				A_2=−0.05 *7*; A_4=−0.06 *10* A_2, A_4 For 357γ+357.2γ.
364.3 *1*	3.5 *5*	814.27	9/2⁻	449.96	7/2⁻	M1+E2	+0.50 *12*	0.0054 *4*	A_2=+0.38 *7*; A_4=+0.36 *12* α(K)=0.0048 *3*; α(L)=0.00052 *4*; α(M)=8.5×10^{-5} *6* α(N)=8.5×10^{-6} *6*
368.6 *1*	5.0 *8*	1063.54	9/2⁻	694.97	(7/2)⁻	M1+E2	+0.13 *6*	0.00447 *10*	A_2=−0.08 *3*; A_4=−0.01 *5* A_2=−0.099 *22*; A_4=−0.016 *23* (1983Ka03) α(K)=0.00397 *9*; α(L)=0.000429 *10*; α(M)=6.95×10^{-5} *16* α(N)=7.01×10^{-6} *16* POL=0.21 *17*, −0.2 *3*. A_2, A_4 from (α,2nγ).
371.2 *1*	4.1 *6*	3585.60	(21/2)⁻	3214.40	19/2⁻	M1+E2	−0.19 *5*	0.00447 *10*	A_2=−0.60 *4*; A_4=+0.04 *7* α(K)=0.00396 *9*; α(L)=0.000429 *10*; α(M)=6.95×10^{-5} *17* α(N)=7.00×10^{-6} *16* POL=−0.27 *18*, −0.14 *21*.
379.4 *2*	1.1 *6*	1363.20	(9/2⁻)	983.76	(7/2)⁻	*d*			A_2=−0.43 A_2 from (α,2nγ).

$^{79}_{36}Kr_{43}$-8

^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48 (continued)

γ(^{79}Kr) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	α[e]	Comments
382.7 *2*	5.3[b] *8*	673.00	7/2(+)	290.41	5/2+	D(+Q)	0.00 *3*		A_2=−0.17 *3*; A_4=−0.03 *5*
384.2 *2*	5.6 *9*	384.15	3/2−	0.0	1/2−	M1+E2	−0.07 *4*	0.00400 *7*	A_2=−0.25 *4*; A_4=+0.15 *6* α(K)=0.00355 *6*; α(L)=0.000383 *6*; α(M)=6.21×10^{-5} *10* α(N)=6.26×10^{-6} *10*
387.1 *1*	1.5 *2*	1450.61	(11/2−)	1063.54	9/2−	D(+Q)	+0.09 *9*		A_2=−0.08 *4*; A_4=+0.13 *7* A_2, A_4 from (α,2nγ).
397[af]		687.5	3/2+	290.41	5/2+				
401.9 *1*	20 *3*	401.98	5/2−	0.0	1/2−	E2		0.00636	A_2=+0.24 *1*; A_4=−0.05 *2* A_2=+0.32 *3*; A_4=−0.08 *4* (1982Be48) A_2=+0.200 *11*; A_4=−0.102 *11* (1983Ka03) α(K)=0.00562 *8*; α(L)=0.000631 *9*; α(M)=0.0001020 *15* α(N)=1.008×10^{-5} *15* POL=+0.24 *6*, +0.78 *16*. A_2, A_4 from (α,2nγ).
426.0[&]		810.1	1/2−	384.15	3/2−	*d*			A_2=−0.15 *8*; A_4=−0.07 *8* (1983Ka03) I_γ: 1.7 *2* (1983Ka03).
434[af]		836.1	(3/2)	401.98	5/2−				
440[f] *1*	≈0.5[c]	1803.2?		1363.20	(9/2−)				
452.0[&]		836.1	(3/2)	384.15	3/2−	*d*			A_2=−0.30 *6*; A_4=0.00 *5* (1983Ka03) I_γ: 3.4 *2* (1983Ka03).
453.6 *2*	2.6 *5*	4299.3	(25/2+)	3845.7	(23/2)+	M1+E2	+0.12 *5*	0.00271 *5*	A_2=−0.06 *7*; A_4=−0.11 *12* α(K)=0.00241 *4*; α(L)=0.000259 *5*; α(M)=4.19×10^{-5} *7* α(N)=4.23×10^{-6} *7*
461.8 *2*	≈0.5[c]	752.06	5/2+	290.41	5/2+				
465.1 *5*	≈0.5[cb]	1915.76	13/2−	1450.61	(11/2−)	*d*			A_2=−0.75 *22*; A_4=+0.7 *4*
472.8 *4*	≈2[cb]	3618.5	(21/2+)	3145.7	(21/2)+				A_2=+0.14 *5*; A_4=+0.02 *7* A_2, A_4 from (α,2nγ).
476.5 *2*	1.4 *3*	659.34	(5/2)−	182.82	3/2−	*d*			A_2=−0.11 *3*; A_4=−0.03 *3* (1983Ka03) A_2=−0.4 *3* (1990Sc07)
487		636.0	5/2+	148.83	9/2+				γ from 1986ZhZW only.
490.7 *1*	0.8 *1*	1662.15	(13/2)−	1171.47	11/2−				A_2=+0.13 *21*; A_4=+0.06 *3*
499.7[f] *2*	0.8 *3*	2415.54	(15/2−)	1915.76	13/2−				
502.1 *2*	≈1[cb]	4087.6	(23/2−)	3585.60	(21/2)−	*d*			A_2=−0.69 *3*; A_4=+0.12 *6*
504[af]		687.5	3/2+	182.82	3/2−				
506.0[&]		636.0	5/2+	129.74	7/2+				A_2=+0.06 *3*; A_4=−0.02 *3* (1983Ka03) I_γ: 16.0 *5* (1983Ka03).
512.2 *4*	22 *5*	694.97	(7/2)−	182.82	3/2−				
524[f] *1*	≈3[c]	3585.60	(21/2)−	3061.60	19/2−				
524.2 *4*	≈4[c]	673.00	7/2(+)	148.83	9/2+	*d*			A_2=−0.19 *3*; A_4=−0.01 *3* (1983Ka03)

$^{79}_{36}Kr_{43}$-9

^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48 (continued)

$\gamma(^{79}Kr)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	α[e]	Comments
533.3[@] *5*		533.2	$1/2^+$	0.0	$1/2^-$				I_γ: 4.6 *2* (1983Ka03).
544.1 *3*	≈2[cb]	673.00	$7/2^{(+)}$	129.74	$7/2^+$	*d*			A_2=−0.12 *6*; A_4=−0.04 *15* A_2, A_4 from (α,2nγ).
547.5 *2*	2.2 *3*	4133.1	$(23/2^-)$	3585.60	$(21/2)^-$	D+Q	−0.3 *1*		A_2=−0.61 *8*; A_4=+0.03 *13* A_2, A_4 from (α,2nγ).
569.2 *2*	≈1.5	752.06	$5/2^+$	182.82	$3/2^-$	*d*			A_2=−0.18 *10*; A_4=+0.35 *16*
571.4 *3*	≈1[c]	3214.40	$19/2^-$	2643.06	$(17/2)^-$	*d*			A_2=−0.18 *5*; A_4=+0.02 *8*
581.8 *2*	2.6 *4*	983.76	$(7/2)^-$	401.98	$5/2^-$				A_2=−0.37 *6*; A_4=+0.07 *5* (1983Ka03)
586[f] *1*		2643.06	$(17/2)^-$	2056.67	$15/2^-$				
599.6 *5*	≈1[c]	983.76	$(7/2)^-$	384.15	$3/2^-$	*d*			A_2=−0.30 *9*; A_4=−0.13 *11* A_2, A_4 from (α,2nγ) for 599.6+600.2.
600.2 *4*	≈3[c]	4899.3	$(27/2^+)$	4299.3	$(25/2^+)$	D(+Q)	0.00 *5*		A_2=−0.30 *9*; A_4=−0.13 *11* A_2, A_4 For 599.6γ+600.2γ.
613.7 *2*	3.8[b] *5*	1063.54	$9/2^-$	449.96	$7/2^-$	M1+E2	+0.06 *3*	1.34×10^{-3}	A_2=−0.15 *1*; A_4=−0.09 *2* α(K)=0.001192 *17*; α(L)=0.0001271 *18*; α(M)=2.06×10^{-5} *3* α(N)=2.08×10^{-6} *3*
617[af]		907.4	$(3/2,5/2^-)$	290.41	$5/2^+$				
622.2 *2*	≈3.5	752.06	$5/2^+$	129.74	$7/2^+$	*d*			A_2=−0.59 *5*; A_4=+0.09 *10* (1990Sc07) A_2=−0.11 *4*; A_4=+0.03 *4* (1983Ka03) A_2, A_4 For 622.2γ+623.3γ.
623.3 *4*	4.5 *15*	1662.10	$(13/2^+)$	1038.83	$(11/2)^+$	*d*			A_2=−0.59 *5*; A_4=+0.09 *10* A_2, A_4 For 622.2γ+623.3γ.
624.2 *3*	≈0.5[c]	5523.5?		4899.3	$(27/2^+)$				
655.5 *2*	1.7 *3*	3585.60	$(21/2)^-$	2930.21	$(17/2)^-$	E2		1.45×10^{-3}	A_2=+0.25 *12*; A_4=−0.30 *17* α(K)=0.001287 *18*; α(L)=0.0001402 *20*; α(M)=2.27×10^{-5} *4* α(N)=2.27×10^{-6} *4*
661.5 *1*	22 *3*	1063.54	$9/2^-$	401.98	$5/2^-$	E2		1.42×10^{-3}	A_2=+0.32 *5*; A_4=−0.13 *8* A_2=+0.36 *5*; A_4=−0.10 *6* (1982Be48) A_2=+0.19 *4*; A_4=−0.10 *4* (1983Ka03) α(K)=0.001255 *18*; α(L)=0.0001366 *20*; α(M)=2.21×10^{-5} *3* α(N)=2.21×10^{-6} *3* POL=+0.38 *9*, +0.23 *16*.
667.2 *1*	29 *5*	814.27	$9/2^-$	147.08	$5/2^-$	E2		1.38×10^{-3}	A_2=+0.29 *1*; A_4=−0.04 *2* A_2=+0.25 *3*; A_4=−0.05 *4* (1982Be48) A_2=+0.21 *2*; A_4=−0.12 *3* (1983Ka03) α(K)=0.001226 *18*; α(L)=0.0001334 *19*; α(M)=2.16×10^{-5} *3* α(N)=2.16×10^{-6} *3* POL=+0.33 *7*, +0.51 *11*.
668 *1*	≈1[c]	1363.20	$(9/2^-)$	694.97	$(7/2)^-$				
684.5 *2*	5.5 *9*	814.27	$9/2^-$	129.74	$7/2^+$	D			A_2=−0.26 *3*; A_4=−0.01 *5* A_2, A_4 from (α,2nγ).

$^{79}_{36}Kr_{43}$-10

^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48 (continued)

γ(^{79}Kr) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	α[e]	Comments
686.2 *2*	2.5 *9*	1662.10	(13/2$^+$)	975.86	(13/2)$^+$	D			A_2=−0.13 *3*; A_4=−0.11 *5* A_2, A_4 from (α,2nγ).
700.0 *1*	6 *2*	3845.7	(23/2)$^+$	3145.7	(21/2)$^+$	M1+E2	−0.13 *5*	1.00×10^{-3} *2*	A_2=−0.37 *5*; A_4=+0.17 *22* (1990Sc07) A_2=−0.68 *11*; A_4=−0.04 *11* (1988Wi01) α(K)=0.000891 *13*; α(L)=9.48×10^{-5} *14*; α(M)=1.535×10^{-5} *23* α(N)=1.553×10^{-6} *23*
703.9 *2*	1.2 *2*	1363.20	(9/2$^-$)	659.34	(5/2)$^-$	(Q)			A_2=+0.13 *11*; A_4=−0.29 *18* A_2, A_4 from (α,2nγ).
721.5 *1*	43 *6*	1171.47	11/2$^-$	449.96	7/2$^-$	E2		1.12×10^{-3}	A_2=+0.27 *1*; A_4=−0.06 *2* A_2=+0.27 *3*; A_4=−0.07 *5* (1982Be48) A_2=+0.142 *10*; A_4=−0.087 *12* (1983Ka03) α(K)=0.000993 *14*; α(L)=0.0001076 *15*; α(M)=1.740×10^{-5} *25* α(N)=1.744×10^{-6} *25* POL=+0.35 *6*, +0.46 *11*.
724[af]		907.4	(3/2,5/2$^-$)	182.82	3/2$^-$				
744.3 *2*	3.3 *2*	1915.76	13/2$^-$	1171.47	11/2$^-$	(D)			A_2=−0.14 *10* A_2 from (α,2nγ).
747.8 *1*	29 *4*	896.61	11/2$^+$	148.83	9/2$^+$	M1+E2	−0.55 *7*		A_2=−0.83 *2*; A_4=+0.06 *4* A_2=−0.100 *16*; A_4=+0.179 *10* (1983Ka03) A_2=−0.19 *3*; A_4=−0.02 *5* (1982Be48) POL=+0.03 *6*, +0.23 *11*. δ: others: −1.0 *1* (1983Ka03), +0.01 *3* (1982Be48).
755.6 *2*	14[b] *2*	1450.61	(11/2$^-$)	694.97	(7/2)$^-$	(E2)		4	A_2=+0.30 *3*; A_4=−0.09 *6* A_2=+0.36 *7*; A_4=−0.10 *8* (1982Be48) A_2=+0.31 *3*; A_4=−0.20 *3* (1983Ka03) POL=+0.17 *15*.
758.8 *2*	2.3 *4*	2643.06	(17/2)$^-$	1884.37	15/2$^+$	D			A_2=−0.35 *13*; A_4=+0.4 *3*
765.3 *3*	≈2.5[c]	1662.15	(13/2)$^-$	896.61	11/2$^+$	[d]			A_2=−0.74 *9*; A_4=+0.02 *19* A_2=+0.30 *6*; A_4=−0.10 *7* (1982Be48) A_2, A_4 For 765.3γ+765.5γ.
765.5 *3*	≈5[c]	1662.10	(13/2$^+$)	896.61	11/2$^+$	D+Q			A_2=−0.74 *9*; A_4=+0.02 *19* A_2=+0.30 *6*; A_4=−0.10 *7* (1982Be48) A_2, A_4 For 765.3γ+765.5γ.
766.8 *2*	6.8 *10*	896.61	11/2$^+$	129.74	7/2$^+$	E2			A_2=+0.39 *12*; A_4=−0.23 *19* Iγ(748)/Iγ(767)=80 *2*/20 *2* (1988Wi01).
774.1[&f]		1063.54	9/2$^-$	290.41	5/2$^+$				
788.3 *2*	1.8 *3*	1078.71	(5/2$^+$,7/2)	290.41	5/2$^+$	[d]			A_2=−1.02 *9*; A_4=+0.03 *5* (1983Ka03)
792		1428.4	(5/2$^+$)	636.0	5/2$^+$				γ from 1985ZhZX only.
798[af]		1200.4		401.98	5/2$^-$				
800.3 *2*	2.7[b] *5*	2857.02	(17/2$^-$)	2056.67	15/2$^-$				
809.3 *2*	9.5 *15*	958.19	(9/2$^+$)	148.83	9/2$^+$				A_2=+0.20 *3*; A_4=−0.21 *6*

$^{79}_{36}Kr_{43}$-11

^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48 (continued)

$\gamma(^{79}Kr)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	Comments
827.0 *1*	100 *1*	975.86	$(13/2)^+$	148.83	$9/2^+$	E2		A_2=+0.32 *1*; A_4=−0.11 *2* A_2=+0.30 *4*; A_4=−0.08 *4* (1982Be48) A_2=+0.21 *2*; A_4=−0.09 *3* (1983Ka03) POL=+0.43 *4*, +0.40 *6*.
834.8 *3*	≈6[cb]	1507.8	(9/2,11/2)	673.00	$7/2^{(+)}$			
841[af]		1131.7	$(3/2,5/2^-)$	290.41	$5/2^+$			
847.8 *3*	≈20[cb]	1662.15	$(13/2)^-$	814.27	$9/2^-$	E2		A_2=+0.21 *4*; A_4=+0.02 *5* A_2=+0.29 *4*; A_4=−0.08 *5* (1982Be48) POL=+0.39 *7*, +0.56 *10*.
852.1 *3*	24 *4*	1915.76	$13/2^-$	1063.54	$9/2^-$	E2		A_2=+0.22 *2*; A_4=+0.02 *4* A_2=+0.38 *8*; A_4=−0.08 *10* (1982Be48) A_2=+0.16 *4*; A_4=−0.10 *4* (1983Ka03) POL=+0.47 *8*, +0.39 *14*.
866.8 *3*	1.3 *2*	3845.7	$(23/2)^+$	2978.9	$(19/2)^+$			Iγ(867)/Iγ(700)/Iγ(227)=17 *6*/77 *6*/6 *2* (1988Wi01).
873.7 *2*	1.8 *3*	2930.21	$(17/2)^-$	2056.67	$15/2^-$	D		A_2=−0.26 *5*; A_4=+0.20 *10*
885.2 *2*	33 *5*	2056.67	$15/2^-$	1171.47	$11/2^-$	E2		A_2=+0.21 *4*; A_4=−0.07 *7* A_2=+0.34 *3*; A_4=−0.07 *4* (1982Be48) A_2=+0.11 *2*; A_4=−0.10 *2* (1983Ka03) POL==+0.62 *7*, +0.38 *13*.
889.9 *3*	15 *3*	1038.83	$(11/2)^+$	148.83	$9/2^+$	M1+E2	+0.18 *4*	A_2=+0.03 *6*; A_4=+0.29 *11* A_2=−0.07 *3*; A_4=+0.22 *3* (1983Ka03) POL=+0.21 *9*, +0.06 *17*.
908[af]		907.4	$(3/2,5/2^-)$	0.0	$1/2^-$			
908.7 *3*	≈8	1884.37	$15/2^+$	975.86	$(13/2)^+$	M1+E2	−0.16 *4*	A_2=−0.47 *4*; A_4=−0.14 *7* A_2, A_4 For 908.7γ+909γ. Iγ(909)/Iγ(988)=50 *10*/50 *10* (1988Wi01).
909 *1*	≈12[cb]	1038.83	$(11/2)^+$	129.74	$7/2^+$			A_2=−0.47 *4*; A_4=−0.14 *7* A_2, A_4 for 908.7γ+909γ.
910[af]		1200.4		290.41	$5/2^+$			
941.5 *5*	≈5[c]	2857.02	$(17/2^-)$	1915.76	$13/2^-$	(E2)		A_2=+0.09 *3*; A_4=−0.08 *6* A_2, A_4 For 941.5γ+942.7γ.
942.7 *6*	≈4[c]	3585.60	$(21/2)^-$	2643.06	$(17/2)^-$			A_2=+0.09 *3*; A_4=−0.08 *6* A_2, A_4 For 941.5γ+942.7γ.
954[&f]		1850.6?	(13/2)	896.61	$11/2^+$			
965.0 *2*	7[cb] *2*	2415.54	$(15/2^-)$	1450.61	$(11/2^-)$	(E2)		A_2=+0.26 *4*; A_4=−0.09 *8* A_2=+0.16 *6*; A_4=−0.10 *6* (1983Ka03)
967.6 *3*	≈2[c]	3383.1	$(19/2^-)$	2415.54	$(15/2^-)$	(Q)		A_2=+0.31 *4*; A_4=+0.06 *7*
969[af]		1502.2?		533.2	$1/2^+$			
977.3 *3*	6 *2*	2978.9	$(19/2)^+$	2001.86	$(17/2)^+$	M1(+E2)	−0.3 *5*	A_2=−0.76 *5*; A_4=+0.14 *8*
980.8 *3*	14[b] *3*	2643.06	$(17/2)^-$	1662.15	$(13/2)^-$	E2		A_2=+0.37 *2*; A_4=−0.08 *3* A_2=+0.06 *7*; A_4=−0.04 *7* (1983Ka03)

$^{79}_{36}Kr_{43}$-12

^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48 (continued)

$\gamma(^{79}Kr)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	Comments
							A_2=+0.35 *5*; A_4=−0.08 *7* (1982Be48) POL=+0.31 *16*, +0.51 *27*.
987.7 *3*	7 *2*	1884.37	15/2$^+$	896.61	11/2$^+$	E2	A_2=+0.50 *4*; A_4=−0.11 *7* A_2=+0.32 *6*; A_4=−0.05 *4* (1988Wi01) A_2=+0.24 *6*; A_4=−0.13 *9* (1983Ka03)
1004.8 *3*	11 *2*	3061.60	19/2$^-$	2056.67	15/2$^-$	E2	A_2=+0.28 *3*; A_4=−0.11 *6* A_2=+0.38 *10*; A_4=−0.05 *12* (1982Be48) POL=+0.35 *14*, +0.40 *17*.
1008[af]		1299.1	(5/2$^+$)	290.41	5/2$^+$		
1012.0 *3*	4.1 *7*	3655.1	(21/2)$^-$	2643.06	(17/2)$^-$	E2	A_2=+0.41 *7*; A_4=−0.42 *10*
1014.4 *3*	12 *2*	2930.21	(17/2)$^-$	1915.76	13/2$^-$	(E2)	A_2=+0.26 *6*; A_4=+0.12 *11*
1018[af]		1200.4		182.82	3/2$^-$		
1022.9 *3*	5.3 *9*	1171.47	11/2$^-$	148.83	9/2$^+$		
1025.5 *5*	≈5	4087.6	(23/2$^-$)	3061.60	19/2$^-$		
1025.9 *3*	50 *8*	2001.86	(17/2)$^+$	975.86	(13/2)$^+$	E2	A_2=+0.39 *2*; A_4=−0.11 *13* A_2=+0.32 *5*; A_4=−0.09 *5* (1982Be48) A_2=+0.11 *4*; A_4=−0.12 *4* (1983Ka03) POL=+0.48 *6*, +0.47 *9*. A_2, A_4, POL for 1025.5γ+1025.9γ, but contribution from 1025.5 is negligible.
1053[f] *1*	≈1[c]	4708.1?	(25/2$^-$)	3655.1	(21/2)$^-$		A_2=−0.06 *7*; A_4=−0.14 *11* A_2, A_4 For 1053γ+1053.5γ from (α,2nγ).
1053.5 *4*	≈3[c]	4899.3	(27/2$^+$)	3845.7	(23/2)$^+$		A_2=−0.06 *7*; A_4=−0.14 *11* A_2, A_4 For 1053γ+1053.5γ from (α,2nγ). Iγ(1053)/Iγ(600)=55 *10*/45 *10* (1988Wi01).
1059.6 *3*	≈5[c]	3061.60	19/2$^-$	2001.86	(17/2)$^+$		
1071.3 *4*	≈0.8	4133.1	(23/2$^-$)	3061.60	19/2$^-$		
1080.8 *3*	2.3 *4*	2056.67	15/2$^-$	975.86	(13/2)$^+$	D	A_2=−0.22 *12*; A_4=+0.19 *19* A_2, A_4 from (α,2nγ).
1094.1 *5*	4.7 *8*	2978.9	(19/2)$^+$	1884.37	15/2$^+$	(E2)	A_2=+0.35 *5*; A_4=−0.02 *8* A_2, A_4 from (α,2nγ). Iγ(977)/Iγ(1094)=58 *4*/42 *4* (1988Wi01).
1096.6 *4*	11 *2*	2135.6	(15/2$^+$)	1038.83	(11/2)$^+$		A_2=+0.33 *10* A_2 from (α,2nγ).
1132[af]		1131.7	(3/2,5/2$^-$)	0.0	1/2$^-$		
[x]1137[&]							$\gamma(\theta)$ shows ΔJ=1 (1983Ka03).
1139[af]		1428.4	(5/2$^+$)	290.41	5/2$^+$		
1143.8 *2*	21 *3*	3145.7	(21/2)$^+$	2001.86	(17/2)$^+$	E2	A_2=+0.32 *3*; A_4=−0.08 *6* A_2=+0.37 *6*; A_4=−0.10 *7* (1982Be48) POL=+0.54 *20*, +0.48 *17*.
1151[af]		1333.8?		182.82	3/2$^-$		
1153 *1*	≈3[c]	3288.6	(19/2$^+$)	2135.6	(15/2$^+$)	Q	A_2=+0.38 *3*; A_4=−0.14 *4* A_2, A_4 For 1153γ+1153.6γ from (α,2nγ).

$^{79}_{36}Kr_{43}$-13

^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48 (continued)

γ(^{79}Kr) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	Comments
1153.6 *4*	≈4 [c]	4299.3	(25/2$^+$)	3145.7	(21/2)$^+$	(E2)	A_2=+0.38 *3*; A_4=−0.14 *4* A_2, A_4 For 1153γ+1153.6γ from (α,2nγ). Iγ(1154)/Iγ(454)=75 *5*/25 *5* (1988Wi01).
1157.6 *4*	8.1 *13*	3214.40	19/2$^-$	2056.67	15/2$^-$	E2	A_2=+0.22 *5*; A_4=−0.18 *10* pol=+0.5 *4*.
1160.0 *5*	≈2 [c]	2135.6	(15/2$^+$)	975.86	(13/2)$^+$		
1170		1299.1	(5/2$^+$)	129.74	7/2$^+$		γ from 1985ZhZX only.
1184 [af]		1568.2		384.15	3/2$^-$		
[x] 1194 [&]							Coin. With 749γ (from 897 level). Excitation function shows J$^\pi$≈13/2 (1983Ka03). It may define a level at 2091.
1212.4 *4*	≈1 [c]	3214.40	19/2$^-$	2001.86	(17/2)$^+$		
1224 *1*	≈1 [cb]	5523.5?		4299.3	(25/2$^+$)		Iγ(1224)/Iγ(624)=70/30 (1988Wi01).
1245 [af]		1428.4	(5/2$^+$)	182.82	3/2$^-$		
1308 [af]		1598.4?		290.41	5/2$^+$		
1316 [af]		1606.4?		290.41	5/2$^+$		
1367 [af]		1549.8?		182.82	3/2$^-$		
1417		1707.4	(5/2$^+$,7/2)	290.41	5/2$^+$		γ from 1985ZhZX only.
1513.3 *3*	1.3 *4*	1662.10	(13/2$^+$)	148.83	9/2$^+$		

[†] From 1990Sc07, unless otherwise stated.
[‡] From (α,2nγ) reaction (1990Sc07), unless otherwise stated. For intensities from (α,3nγ) reaction see 1990Sc07 and 1982Be48. For intensities from (α,nγ) reaction see 1983Ka03. Values given by 1982Be48 differ by as much as a factor of 3 in some cases. It is curious to note that their values agree better with those for ^{77}Se(α,2nγ) E=27 MeV as given by 1990Sc07.
[#] From γ(θ) and γ(lin pol) data (1990Sc07), unless otherwise stated. Pairs of pol values given under comments are from (α,2nγ) and (α,3nγ), respectively. In cases where only γ(θ) data are available, mult=M1+E2 or E2 are assigned using RUL for E2 and M2.
[@] From 1983Ka03 and 1982IrZZ, not reported by 1990Sc07.
[&] From 1983Ka03 only. Treated as uncertain by the evaluator.
[a] From 1982IrZZ only. Treated as uncertain by the evaluator.
[b] May include contribution from a contaminant (1990Sc07).
[c] From γγ.
[d] Negative A_2 coefficient indicates ΔJ=0 or 1 transition.
[e] From BrIcc v2.3b (16-Dec-2014) 2008Ki07, "Frozen Orbitals" appr. If No δ(E2/M1) value given, α overlaps pure M1 and pure E2.
[f] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

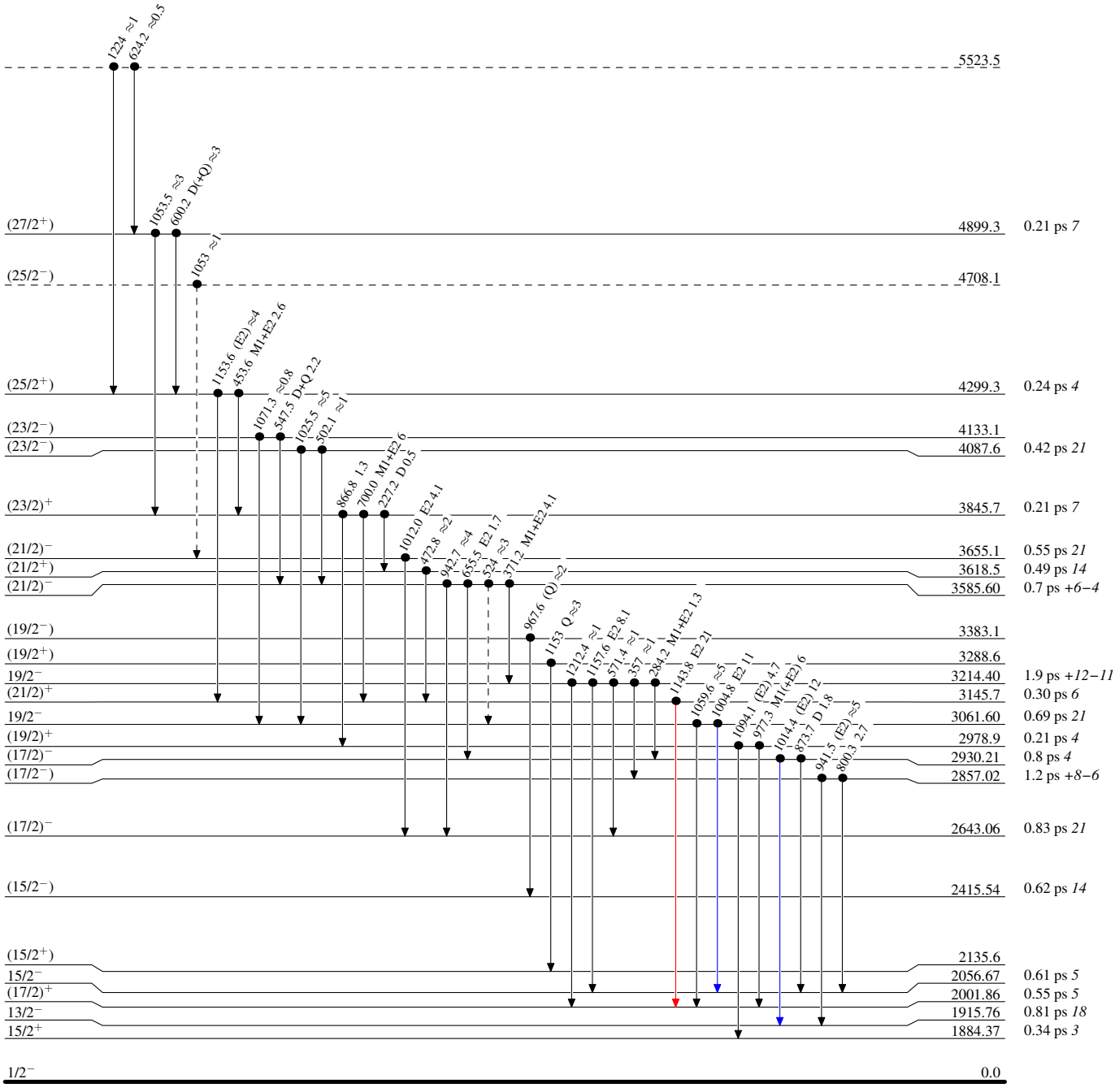
$^{79}_{36}Kr_{43}$-14

^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48

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)
- Coincidence



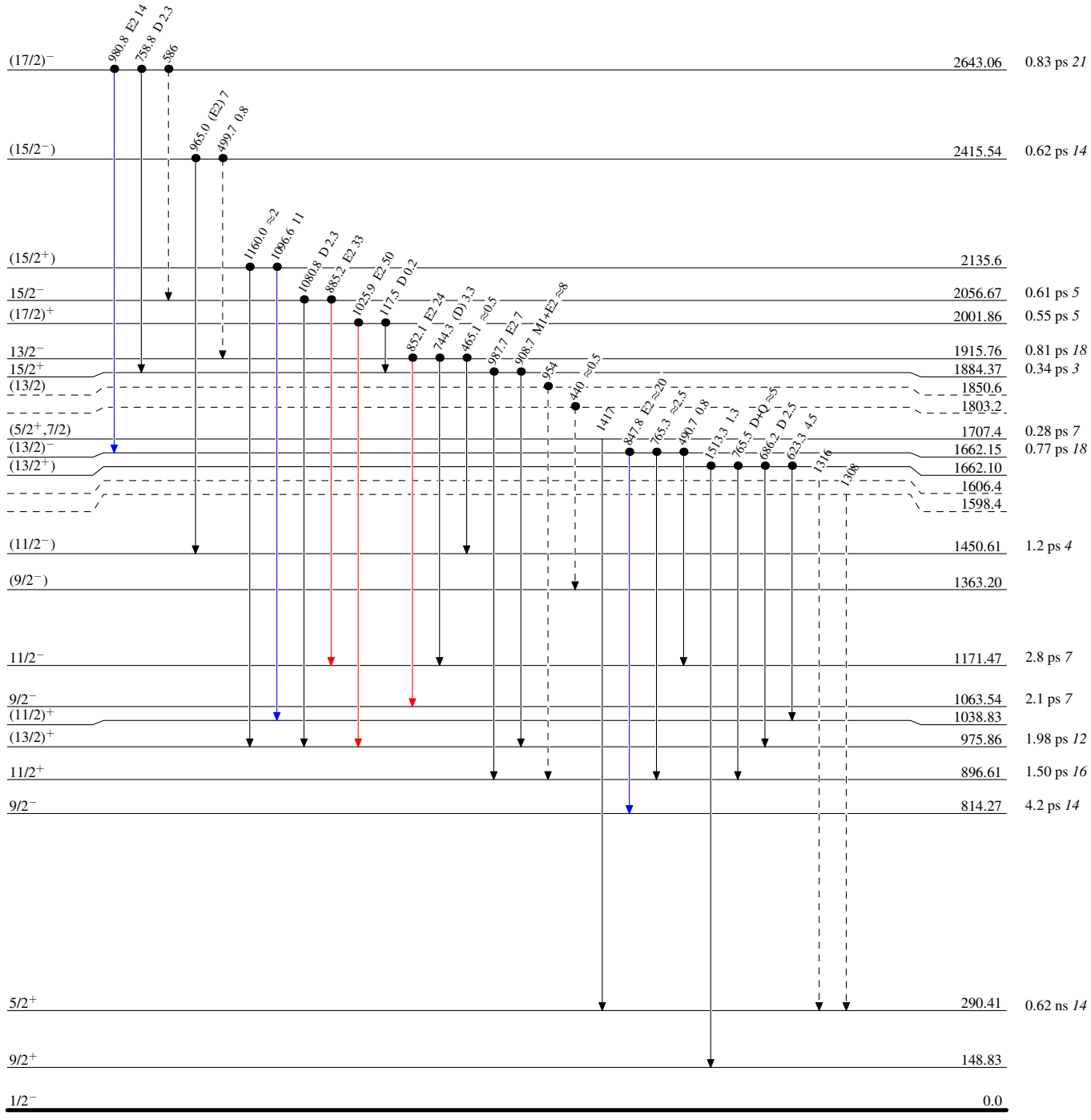
$^{79}_{36}Kr_{43}$

^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48

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)
- Coincidence



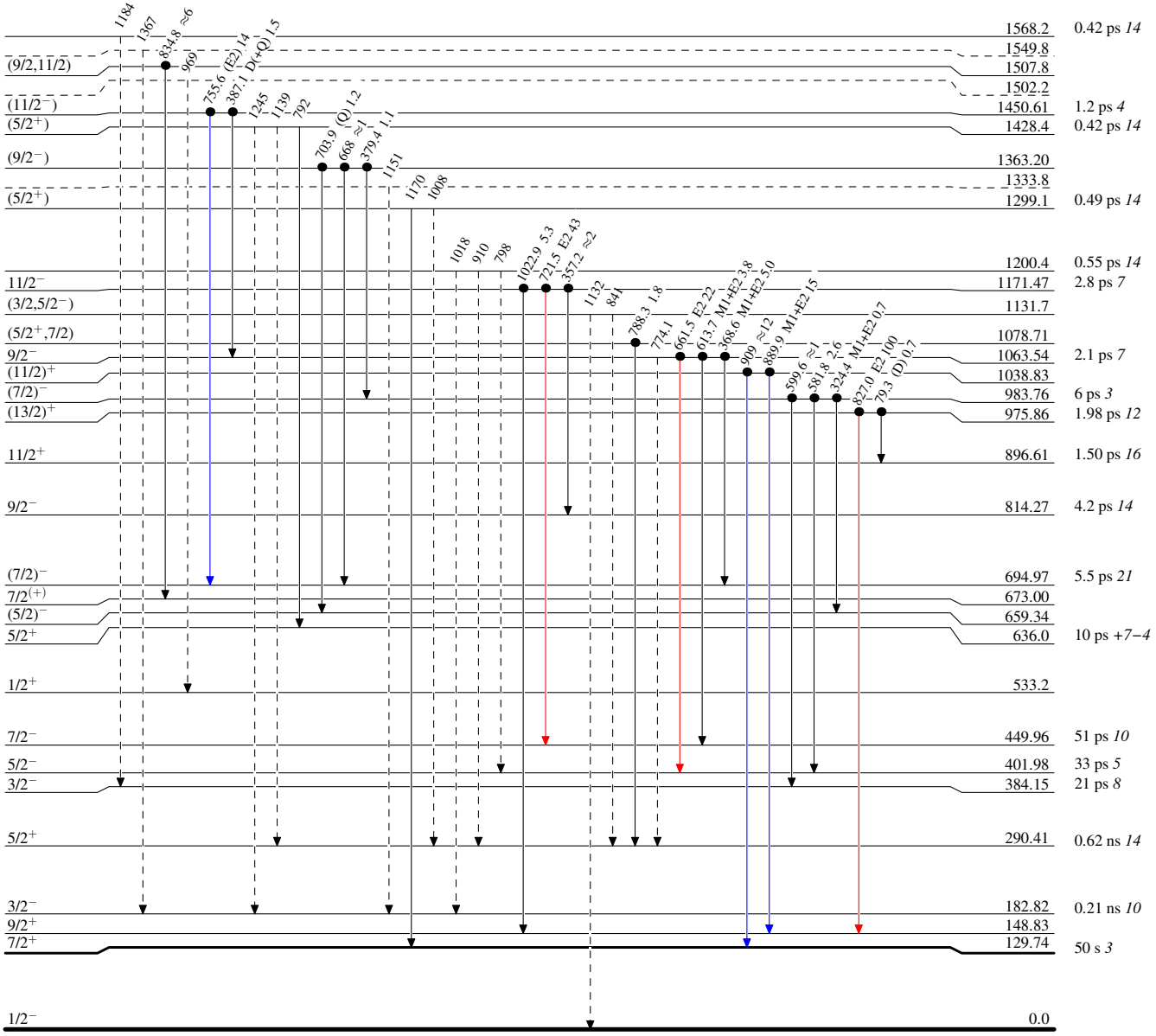
$^{79}_{36}Kr_{43}$

^{77}Se(α,2nγ),^{78}Se(α,3nγ) **1990Sc07,1983Ka03,1982Be48**

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)
- Coincidence



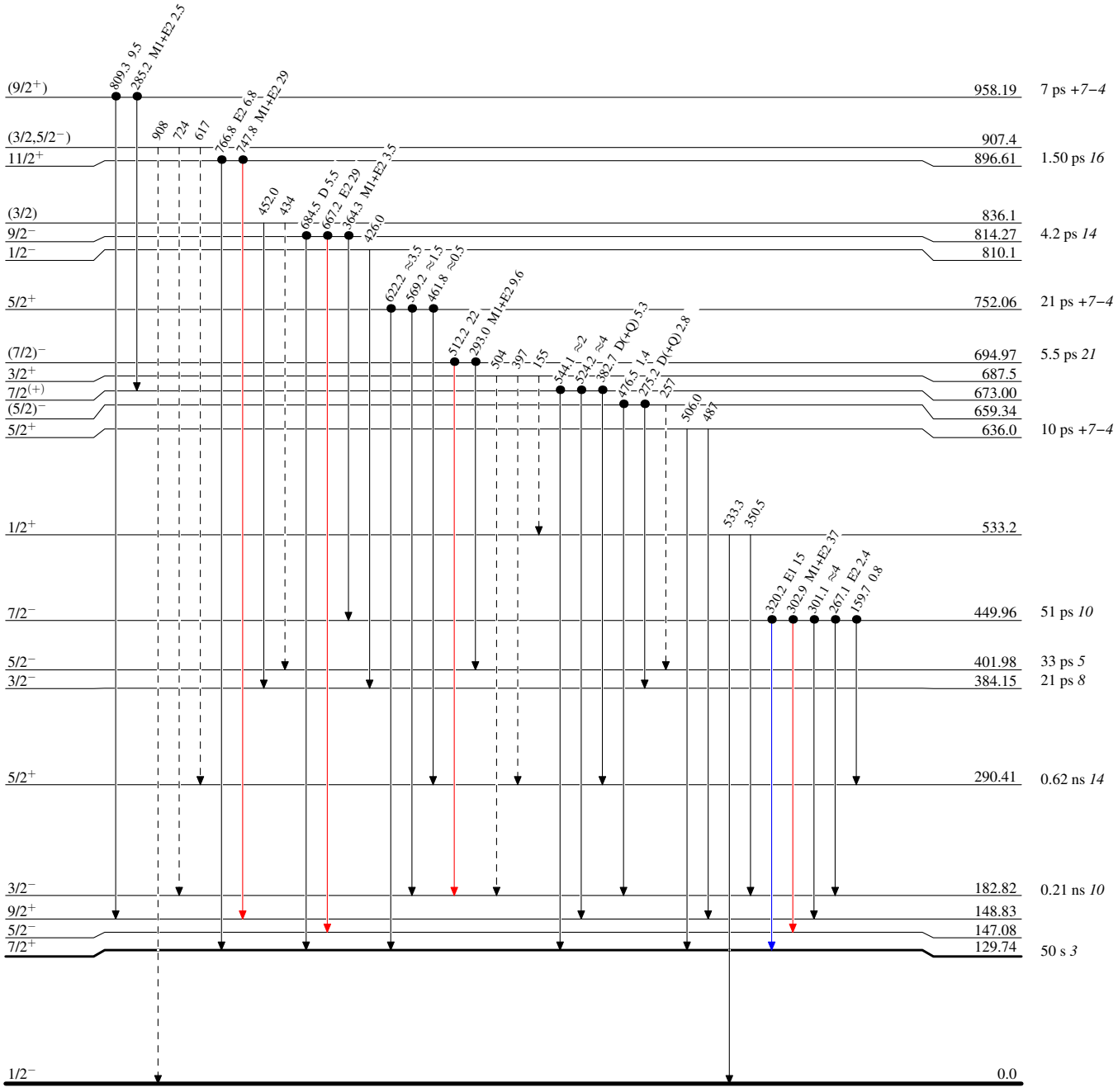
$^{79}_{36}Kr_{43}$

^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48

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)
- Coincidence

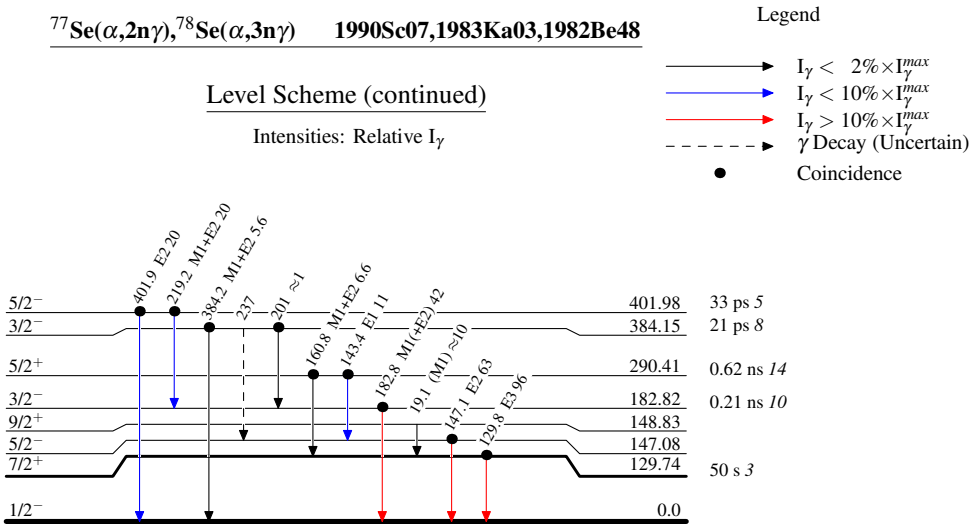


$^{79}_{36}Kr_{43}$

^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48

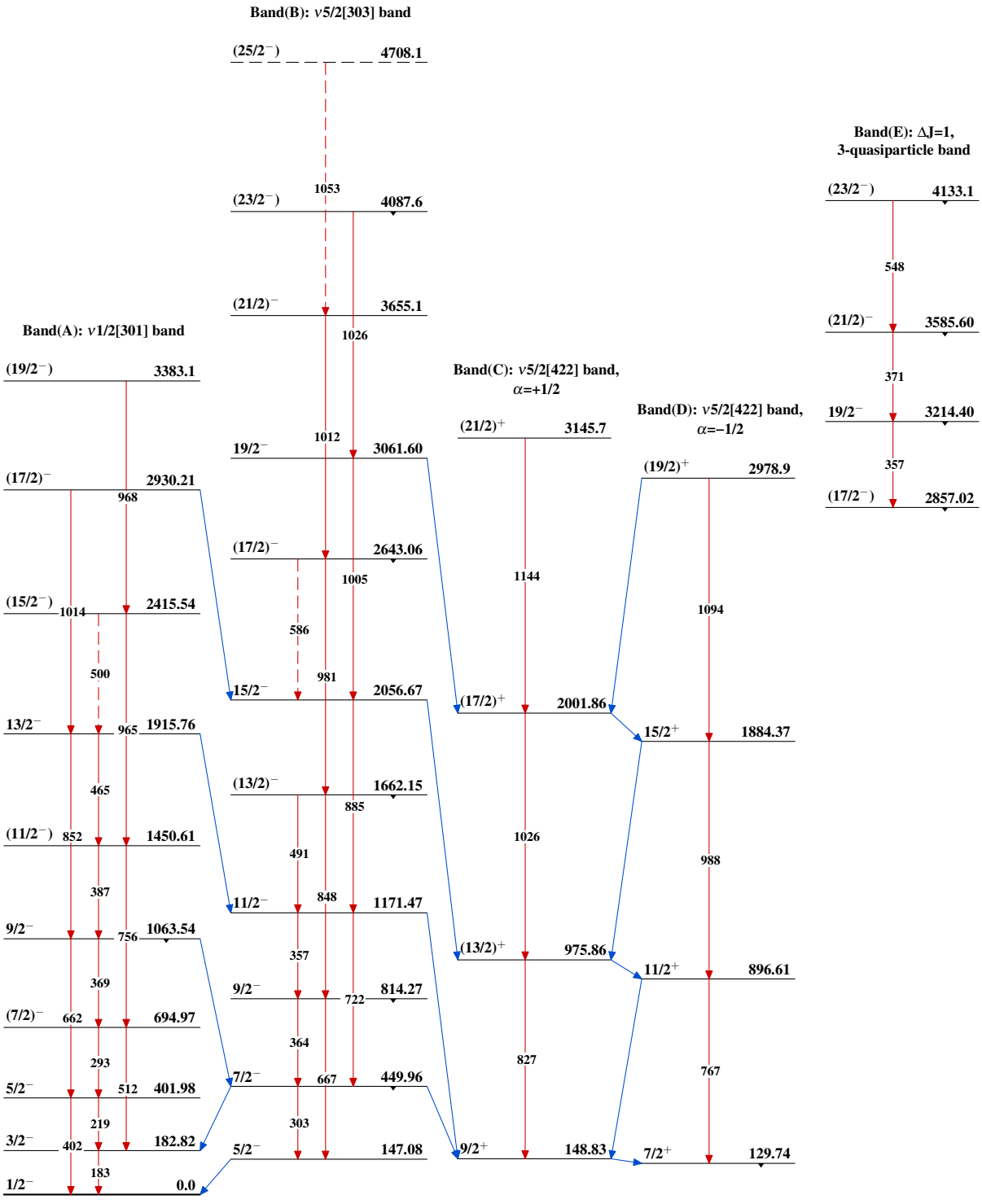
Level Scheme (continued)

Intensities: Relative I_γ



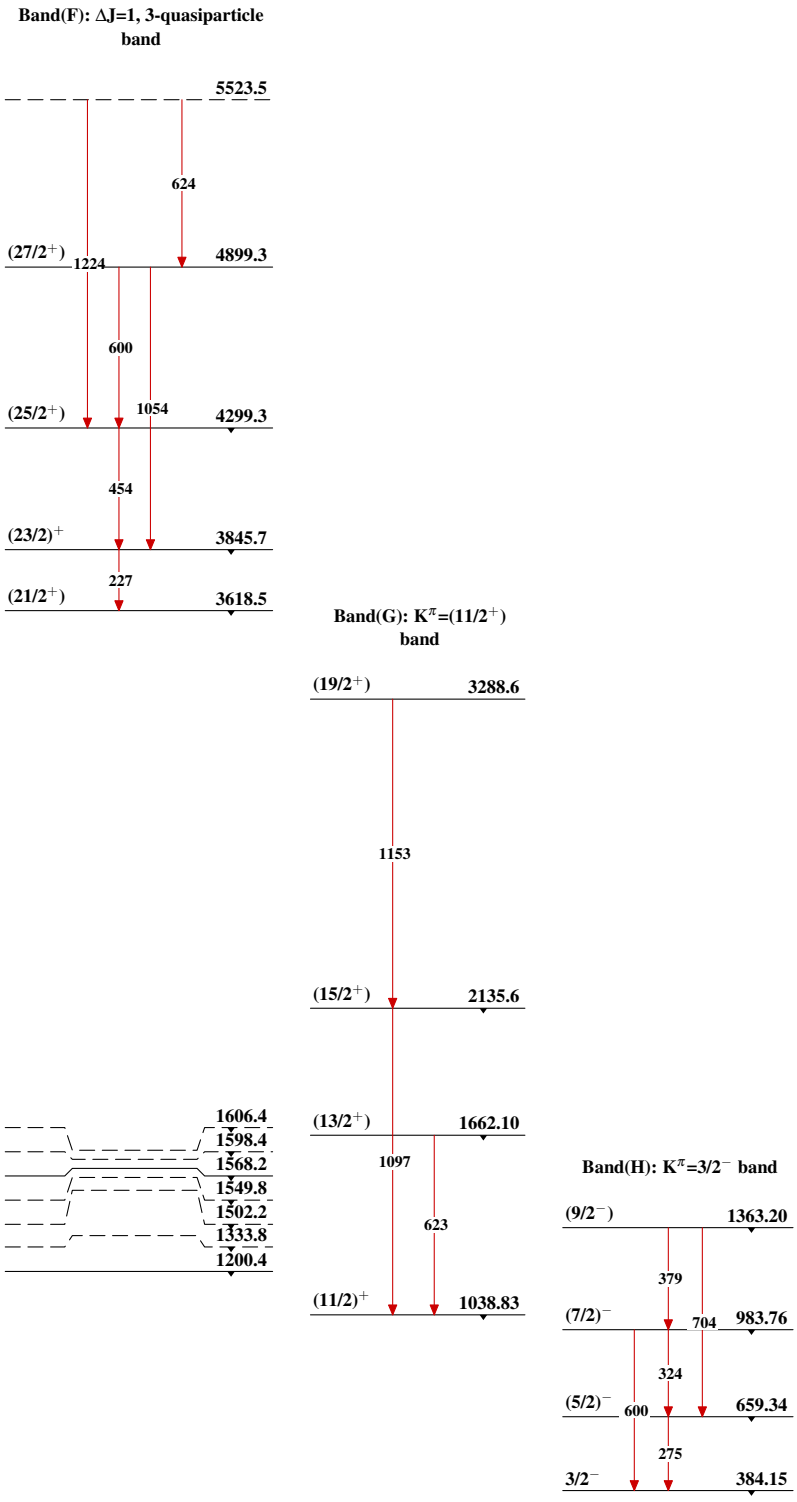
$^{79}_{36}Kr_{43}$

^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48



$^{79}_{36}Kr_{43}$

^{77}Se(α,2nγ),^{78}Se(α,3nγ) 1990Sc07,1983Ka03,1982Be48 (continued)



$^{79}_{36}Kr_{43}$