^{79}Br(p,nγ) 1980To07,1975Bh02

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

1980To07: E=2.82-3.50 MeV. γ, γγ, nγ, γ(θ), and excitation functions. Enriched target.
1975Bh02: E=1.7-5.0 MeV. γ, γγ, nγ, ce. Low lying levels explained in terms of Coriolis coupling model (1974Ba75).
Others:
1980IrZZ: E=6 MeV. No details available.
1968Bl04: measured γ(t) and γ(θ,H,t).

^{79}Kr Levels

E(level)‡	Jπ†	$T_{1/2}$	Comments
0.0	$1/2^-$		
129.9 *3*	$7/2^+$	50 s *3*	%IT=100 $T_{1/2}$: from Adopted Levels.
147.11 *24*	$5/2^-$	77.7 ns *15*	g=+0.449 *4* (1968Bl04) $T_{1/2}$: from γ(t) (pulsed-beam) (1968Bl04).
149.0 *5*	$9/2^+$		
182.90 *22*	$3/2^-$		
290.76 *25*	$5/2^+$		
383.92 *24*	$3/2^-$		
401.98 *25*	$5/2^-$		
449.7 *4*	$7/2^-$		
533.5 *3*	$1/2^+$		
636.2# *4*	$5/2^+$		
659.3 *3*	$(5/2)^-$		
672.9# *5*	$7/2^{(+)}$		
675.9 *6*			
688.2 *3*	$3/2^+$		
694.6 *4*	$(7/2)^-$		
719.3@ *8*			
752.1 *4*	$5/2^+$		
809.4 *3*	$1/2^-$		
835.6 *3*	(3/2)		
907.5 *3*	$(3/2,5/2^-)$		
931.1@ *8*			
982.9# *4*	$(7/2)^-$		
986.9@ *6*			
1037.8@ *5*			

† From Adopted Levels.
‡ From least-squares fit to Eγ data.
# Level proposed by 1980To07 only.
@ Level proposed by 1975Bh02 only.

^{79}Br(p,nγ) 1980To07,1975Bh02 (continued)

γ(^{79}Kr)

A_2 and A_4 are from 1980To07 at E(p)=3.50 MeV.

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ	α[a]	Comments
129.9	7/2+	129.9 *5*	100	0.0	1/2−	E3		2.62 *6*	α(K)exp=1.9 *1* α(K)=2.07 *5*; α(L)=0.468 *12*; α(M)=0.0765 *19* α(N)=0.00645 *16*
147.11	5/2−	17.0[@] *5*		129.9	7/2+	[E1]		14.0 *12*	α(K)=12.1 *10*; α(L)=1.61 *15*; α(M)=0.253 *23* α(N)=0.0224 *20*
		147.0 *5*	100	0.0	1/2−	E2		0.223 *5*	α(K)exp=0.18 *1* A_2=+0.030 *15*; A_4=−0.011 *24* α(K)=0.193 *4*; α(L)=0.0252 *5*; α(M)=0.00407 *8* α(N)=0.000382 *8* δ(E2/M1)>2.3.
149.0	9/2+	(19.1 *1*)		129.9	7/2+	[M1]		15.5	E_γ: from Adopted Gammas.
182.90	3/2−	182.7 *5*	100	0.0	1/2−	M1+E2	0.36 *9*	0.034 *4*	α(K)exp=0.030 *3* A_2=−0.016 *11*; A_4=−0.018 *19* α(K)=0.030 *4*; α(L)=0.0035 *5*; α(M)=0.00056 *8* α(N)=5.5×10^{-5} *7*
290.76	5/2+	108.3 *5*	1	182.90	3/2−				α(K)exp=0.3 Mult.: α(K)exp implies E2+M1 with δ=0.8 *4* but is inconsistent with ΔJ$^\pi$. For mult=E1+M2, δ=0.6 *2*.
		143.3 *5*	58	147.11	5/2−	(E1)		0.0310 *6*	α(K)exp=0.077 *30* A_2=+0.049 *17*; A_4=−0.023 *31* α(K)=0.0276 *5*; α(L)=0.00296 *6*; α(M)=0.000476 *9* α(N)=4.72×10^{-5} *9* Mult.: α(K)exp agrees better with M1 but inconsistent with ΔJ$^\pi$. δ=0.44 *18* for E1+M2 and 0.5 *3* for M1+E2.
		160.7 *5*	42	129.9	7/2+	D			A_2=−0.146 *21*; A_4=−0.03 *4* α(K)exp=0.024 *6* Mult.: α(K)exp implies E1 (δ<0.23) or M1. From Adopted Gammas, mult=M1+E2, δ=+0.29 *10*.
		291[@b]	3	0.0	1/2−				
383.92	3/2−	201.0 *5*	12	182.90	3/2−				
		236.9 *5*	2	147.11	5/2−	M1(+E2)	<0.8	0.0182 *51*	α(K)exp=0.014 *7* α(K)=0.0161 *45*; α(L)=0.00182 *55*; α(M)=2.95×10^{-4} *89* α(N)=2.91×10^{-5} *84*
		384.0 *5*	86	0.0	1/2−	M1		0.00399	α(K)exp=0.0034 *2* α(K)=0.00354 *5*; α(L)=0.000382 *6*; α(M)=6.19×10^{-5} *9* α(N)=6.24×10^{-6} *9*
401.98	5/2−	111[@] *1*	6	290.76	5/2+				
		219.1 *5*	53	182.90	3/2−	M1+E2	0.5 *3*	0.0232 *68*	α(K)exp=0.020 *5* A_2=−0.020 *21*; A_4=−0.07 *5* α(K)=0.0204 *60*; α(L)=0.00234 *75*;

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^{79}Br(p,nγ) 1980To07,1975Bh02 (continued)

γ(^{79}Kr) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[a]	Comments
								α(M)=3.8×10^{-4} *12* α(N)=3.7×10^{-5} *12*
401.98	5/2$^-$	401.7 *5*	41	0.0	1/2$^-$	(E2)	0.00637	α(K)exp=0.0054 *8* A$_2$=+0.118 *25*; A$_4$=−0.06 *4* α(K)=0.00562 *9*; α(L)=0.000632 *10*; α(M)=0.0001022 *15* α(N)=1.009×10^{-5} *15* δ(E2/M1)>1.3.
449.7	7/2$^-$	300.7[b] *5*		149.0	9/2$^+$			
		302.4 *5*	72	147.11	5/2$^-$	M1,E2	0.0118 *47*	α(K)exp=0.011 *7* A$_2$=+0.323 *27*; A$_4$=+0.04 *4* α(K)=0.0104 *42*; α(L)=0.00118 *50*; α(M)=1.91×10^{-4} *81* α(N)=1.89×10^{-5} *77*
		320.0 *5*	28	129.9	7/2$^+$	E1	0.00310	α(K)exp=0.0030 *4* A$_2$=+0.16 *5*; A$_4$=−0.11 *9* α(K)=0.00275 *4*; α(L)=0.000293 *5*; α(M)=4.73×10^{-5} *7* α(N)=4.74×10^{-6} *7* δ(M2/E1)<0.18.
533.5	1/2$^+$	350.5 *5*	81	182.90	3/2$^-$	E1	0.00242	α(K)exp=0.0020 *4* α(K)=0.00215 *4*; α(L)=0.000229 *4*; α(M)=3.70×10^{-5} *6* α(N)=3.71×10^{-6} *6*
		533.3 *5*	19	0.0	1/2$^-$			
636.2	5/2$^+$	345.6 *5*	11	290.76	5/2$^+$			
		487.1 *5*	20	149.0	9/2$^+$			A$_2$=+0.02 *7*; A$_4$=−0.08 *10*
		506.2 *5*	69	129.9	7/2$^+$			
659.3	(5/2)$^-$	257.4 *5*	4	401.98	5/2$^-$			
		275.0 *5*	44	383.92	3/2$^-$	M1	0.00904	α(K)exp=0.0075 *10* A$_2$=−0.10 *3*; A$_4$=+0.03 *6* α(K)=0.00801 *12*; α(L)=0.000871 *13*; α(M)=0.0001413 *21* α(N)=1.424×10^{-5} *21*
		476.4 *5*	18	182.90	3/2$^-$			A$_2$=−0.03 *5*; A$_4$=−0.09 *9*
		512.6 *5*	34	147.11	5/2$^-$			
672.9	7/2$^{(+)}$	382.1 *5*		290.76	5/2$^+$			
		524.0[b]		149.0	9/2$^+$			
		543.1		129.9	7/2$^+$			
675.9		385[@] *1*		290.76	5/2$^+$			
		493[@] *1*		182.90	3/2$^-$			
		676[@] *1*		0.0	1/2$^-$			
688.2	3/2$^+$	154.6 *5*	11	533.5	1/2$^+$			
		305[@] *1*	<1	383.92	3/2$^-$			
		397.4 *5*	13	290.76	5/2$^+$			
		505.0 *5*	16	182.90	3/2$^-$			
		542[@] *1*	2	147.11	5/2$^-$			
		688.1 *5*	60	0.0	1/2$^-$			A$_2$=+0.02 *4*; A$_4$=−0.12 *6*
694.6	(7/2)$^-$	292.8 *5*	26	401.98	5/2$^-$			A$_2$=−0.07 *6*; A$_4$=+0.16 *11*
		511.4 *5*	74	182.90	3/2$^-$			
		695[@b] *1*		0.0	1/2$^-$			This transition with implied mult=E3 is considered as uncertain by the evaluator.
719.3		428[@] *1*		290.76	5/2$^+$			

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^{79}Br(p,nγ) 1980To07,1975Bh02 (continued)

γ(^{79}Kr) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ	α[a]	Comments
719.3		537[@] *1*		182.90	3/2⁻				
752.1	5/2⁺	461.4 *5*	14	290.76	5/2⁺				
		569.0 *5*	10	182.90	3/2⁻				
		622.2 *5*	76	129.9	7/2⁺	M1(+E2)	<1	0.00139 *10*	α(K)exp=0.0010 *3* A_2=+0.07 *3*; A_4=−0.04 *5* α(K)=0.00124 *9*; α(L)=0.000133 *10*; α(M)=2.15×10^{-5} *17* α(N)=2.17×10^{-6} *16*
809.4	1/2⁻	425.6 *5*	81	383.92	3/2⁻				A_2=+0.003 *41*; A_4=−0.07 *7*
		626.7[b]		182.90	3/2⁻				
		662.0 *5*	11	147.11	5/2⁻				
		809.6 *5*	8	0.0	1/2⁻				
835.6	(3/2)	199.5[b]		636.2	5/2⁺				
		301.8 *5*		533.5	1/2⁺				
		433.5 *5*		401.98	5/2⁻				
		451.8 *5*		383.92	3/2⁻				
		652.7[b]		182.90	3/2⁻				
		705.8 *5*		129.9	7/2⁺				
		835.6[b]		0.0	1/2⁻				
907.5	(3/2,5/2⁻)	505.0 *5*		401.98	5/2⁻				
		524.0[b]		383.92	3/2⁻				
		616.8 *5*		290.76	5/2⁺				
		724.9 *5*		182.90	3/2⁻				
		907.7 *5*		0.0	1/2⁻				
931.1		243[@] *1*		688.2	3/2⁺				
		931[@] *1*		0.0	1/2⁻				
982.9	(7/2)⁻	324.1[b]		659.3	(5/2)⁻				
		581.0 *5*		401.98	5/2⁻				
		800 *1*		182.90	3/2⁻				
		835.6 *5*		147.11	5/2⁻				
986.9		603[@] *1*		383.92	3/2⁻				
		803[@] *1*		182.90	3/2⁻				
		988[@] *1*		0.0	1/2⁻				
1037.8		378[@&] *1*		659.3	(5/2)⁻				
		654[@&] *1*		383.92	3/2⁻				
		747[&] *1*		290.76	5/2⁺				
		891[@] *1*		147.11	5/2⁻				
		908[@b]		129.9	7/2⁺				Doublet. Main component is with 908 level.

[†] From 1980To07, unless otherwise stated. Uncertainty of 0.5 to 1 keV assigned by the evaluator, based on accuracy indicated in 1980To07.

[‡] Photon branching ratio (1980To07). Uncertainties not available, but expected to be≈15%.

[#] From ce measurements by 1975Bh02.

[@] From 1975Bh02. This transition to 1/2⁻ level implying (M3) multipolarity is considered as uncertain by the evaluator. Also it was reported only in this reaction, whereas the 695 level is populated quite strongly in other reactions as well.

[&] This placement is unlikely if the level is same as 1038.72, (11/2⁺) in Adopted Levels.

[a] From BrIcc v2.3b (16-Dec-2014) 2008Ki07, "Frozen Orbitals" appr. If No δ(E2/M1) value given, α overlaps pure M1 and pure

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^{79}Br(p,nγ) 1980To07,1975Bh02 (continued)

γ(^{79}Kr) (continued)

E2.
[b] Placement of transition in the level scheme is uncertain.

^{79}Br(p,nγ) 1980To07,1975Bh02

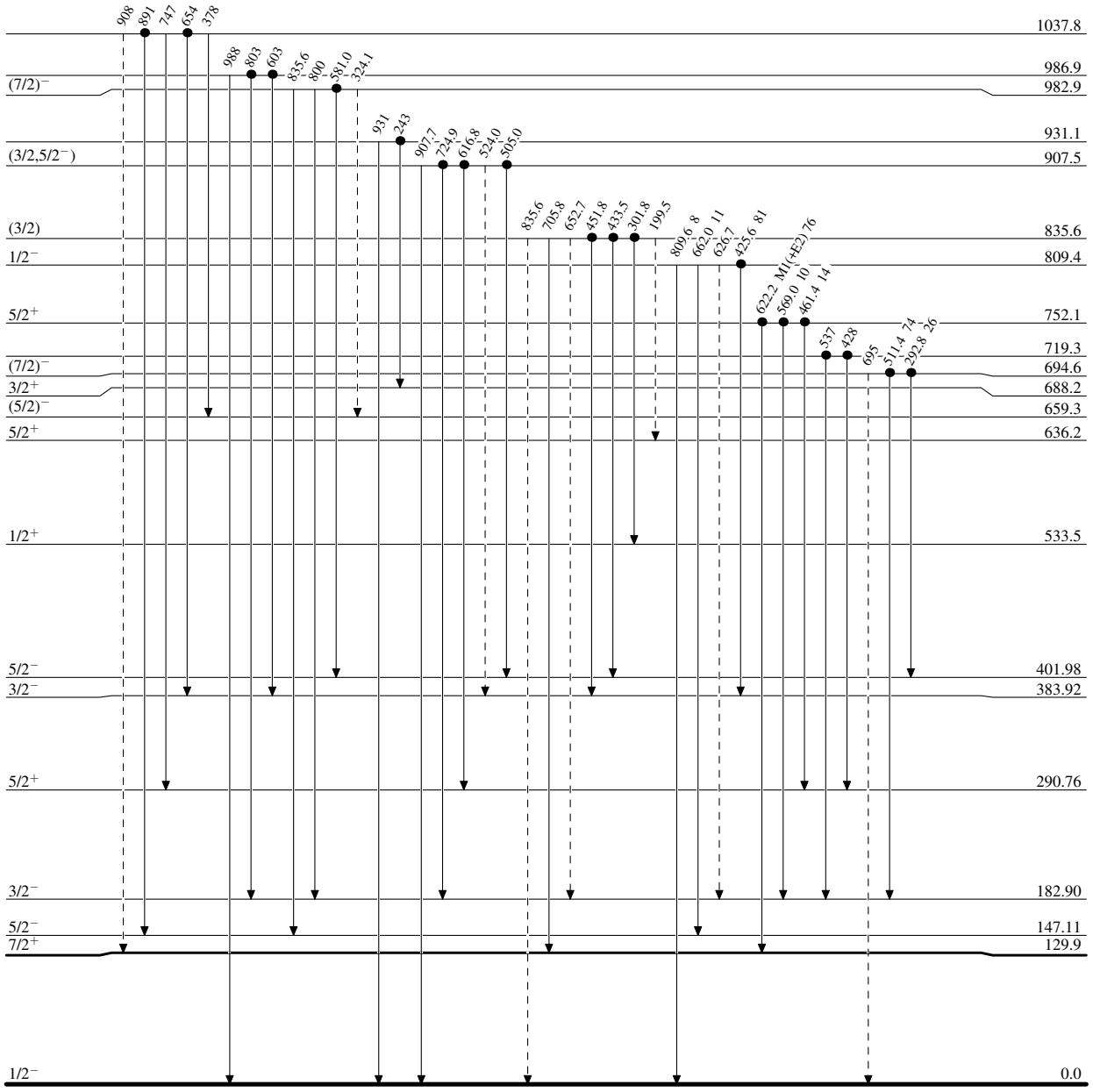
Legend

Level Scheme

Intensities: % photon branching from each level

γ Decay (Uncertain)

Coincidence



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

^{79}Br(p,nγ) 1980To07,1975Bh02

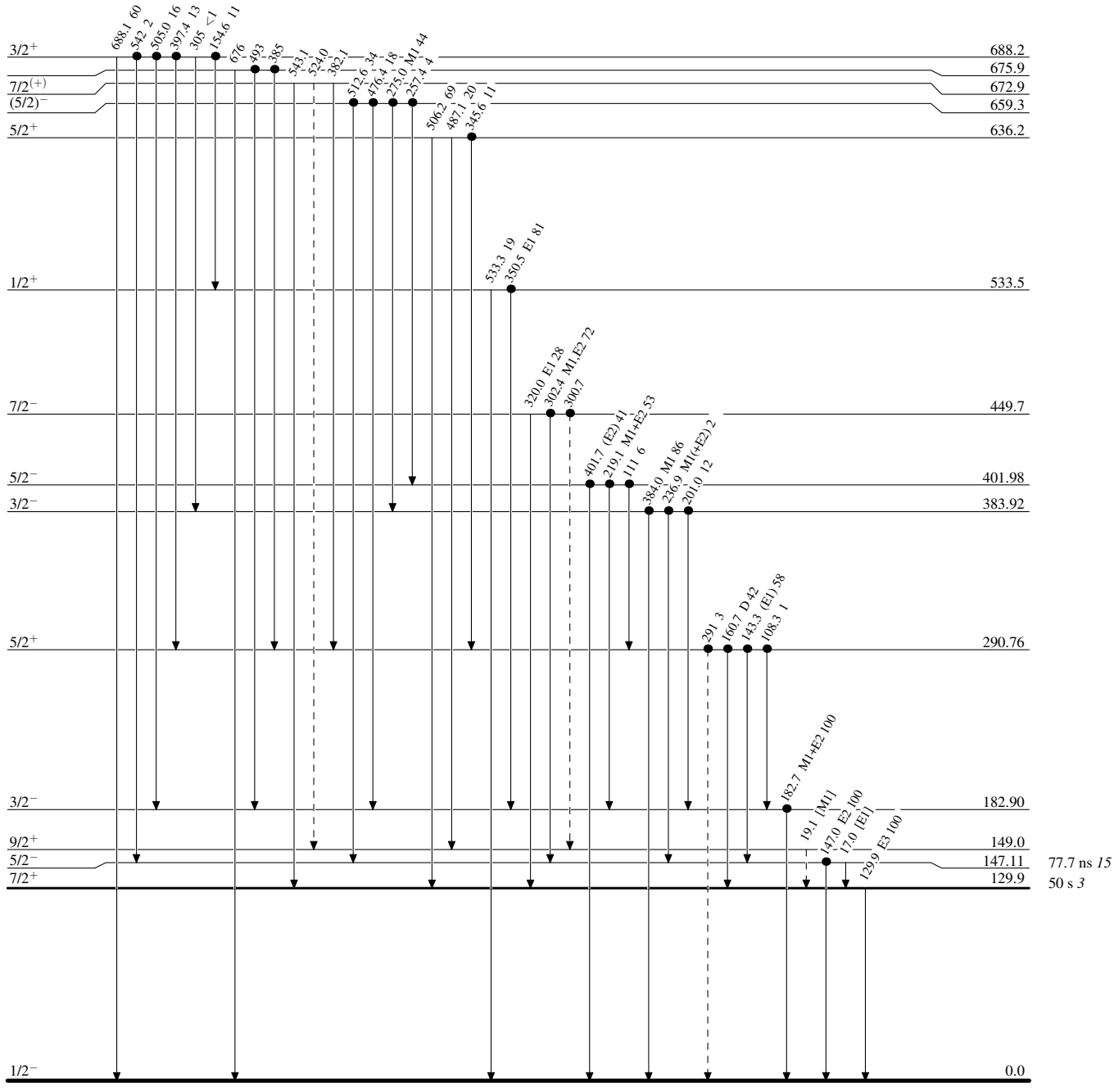
Legend

Level Scheme (continued)

Intensities: % photon branching from each level

- - - - - - ► γ Decay (Uncertain)

● Coincidence



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