^{110}Pd(^{34}S,5nγ) 1996Ro04,1996Br33,1994Va15

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	P. K. Joshi, B. Singh, S. Singh, A. K. Jain	NDS 138, 1 (2016)	15-Oct-2016

Includes ^{114}Cd(^{29}Si,4nγ) reaction from 1990Ba13; and ^{62}Ni(^{81}Br,3npγ),E=350 MeV from 1996Br33.

1996Ro04 (also 1995Ro15): E(^{34}S)=150, 165 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma(\theta)$, $\gamma\gamma(\theta)$(DCO), DSAM for six top transitions in the highly-deformed (intruder) band using GASP array at Legnaro accelerator facility.

1996Br33: ^{62}Ni(^{81}Br,3npγ),E=350 MeV. Measured level lifetimes by DSAM using GASP array of Compton-suppressed Ge detectors.

1994Va15: E(^{34}S)=159 MeV. Measured Eγ, Iγ, and $\gamma\gamma$ using TESSA3 array of 16 Compton-suppressed Ge detectors and a 50-element BGO multiplicity and total-energy filter at Stony Brook accelerator facility. This work was mainly concerned with the finding of the decoupled, strongly-deformed band (band 1 in 1996Ro04).

1990Ba13: ^{114}Cd(^{29}Si,4nγ),E=128 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma(\theta)$ at Legnaro accelerator facility. A detailed level scheme is given in a brief paper, with no details of gamma-ray data.

Level scheme is from 1996Ro04. 1994Va15 report primarily the highly deformed (intruder) band with small differences of level scheme from 1996Ro04.

^{139}Sm Levels

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	Comments
0.0	1/2$^+$[a]		
111.8 *7*	3/2$^+$[a]		
224.0 *8*	(3/2)$^+$[a]		
267.6 *7*	5/2$^+$		
457.9 *10*	11/2$^-$[a]	10.7 s *6*	%ε+%β^+=6.3 *5*; %IT=93.7 *5* T$_{1/2}$ and decay modes from Adopted Levels.
531.7 *7*	5/2$^+$		
590.3 *12*	9/2$^-$[#]		
721.4 *9*	7/2$^+$		
1048.0[c] *11*	15/2$^-$		
1066.0 *12*	13/2$^-$		
1067.8 *13*			
1075.1 *10*	9/2$^+$		
1137.8 *11*	11/2$^+$[@]		
1346.7 *10*	9/2$^+$		
1454.9 *11*	13/2$^+$		
1581.9 *12*	15/2$^-$		
1779.5 *12*	17/2$^-$		
1781.3 *12*	15/2$^+$		
1870.9[c] *12*	19/2$^-$		
1880.0 *13*	13/2$^+$		
1969.0 *12*	17/2$^+$		
2199.0[d] *16*	19/2$^+$	<1 ns	T$_{1/2}$: quoted in 1996Ro04 without giving the method used.
2250.1 *12*	19/2$^-$		
2290.6 *11*	17/2$^+$		
2550.5 *13*	19/2$^+$		
2567.4 *12*	19/2$^+$		
2583.2[d] *19*	23/2$^+$		
2658.5 *11*	21/2$^+$		
2671.5 *13*	21/2$^-$		
2820.9[c] *13*	23/2$^-$		
2868.4[e] *14*	23/2$^+$		
2909.3[i] *13*	21/2$^+$[&]		
3100.8 *13*	25/2$^+$		

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^{110}Pd(^{34}S,5nγ) 1996Ro04,1996Br33,1994Va15 (continued)

^{139}Sm Levels (continued)

E(level)[†]	J^π[‡]	$T_{1/2}$	E(level)[†]	J^π[‡]	$T_{1/2}$	E(level)[†]	J^π[‡]
3255.2 *12*	$23/2^-$		4844.8[i] *17*	$33/2^+$		6387.3[i] *21*	$41/2^+$
3284.8 *20*	25/2		4857.4 *18*	$33/2^+$		6490.2[g] *23*	47/2
3315.6[g] *15*	27/2		4882.0 *22*	33/2		6495.1[f] *18*	(41/2)
3327.5[f] *12*	$25/2^-$		4930.2[f] *16*	$35/2^-$	0.17[b] ps *6*	6602.3 *22*	
3331.9 *21*	25/2		5089.0[g] *19*	39/2		6617[h] *3*	41/2
3349.5[e] *17*	$27/2^+$		5146.3[e] *22*	$35/2^+$		6900.6[j] *23*	45/2
3410.9[d] *20*	$27/2^+$		5164.1[h] *23*	33/2		7177 *3*	43/2
3445.9[f] *13*	$27/2^-$		5280.5[j] *20*	37/2		7194[h] *3*	43/2
3518.7[i] *16*	$25/2^+$		5323.0 *22*	35/2		7235.0 *24*	
3554.7 *21*	29/2		5407.9[h] *23*	35/2		7273.0[i] *23*	$45/2^+$
3710.9[f] *14*	$29/2^-$		5412.4 *20*	39/2		7367.9 *24*	51/2
3736.7[g] *17*	31/2		5443.7[f] *17*	$37/2^-$		7407.2[g] *24*	51/2
4014.8 *23*	(33/2)		5484.4 *21*	(39/2)		8031.6[j] *25*	(49/2)
4048.0[f] *15*	$31/2^-$	0.42[b] ps *15*	5579.4[i] *18*	$37/2^+$		8069.2 *25*	
4120.0 *22*	29/2		5714.3[g] *20*	43/2		8175.6[i] *25*	$49/2^+$
4125.1[e] *20*	$31/2^+$		5726.9[h] *25*	37/2		8287[g] *3*	(55/2)
4164.9[i] *17*	$29/2^+$		5935.1[f] *17*	(39/2)		8525 *3*	
4339.2[d] *21*	$31/2^+$		5963.0[j] *21*	41/2		9084[i] *3*	$53/2^+$
4362.8 *21*	$31/2^+$		6103.8 *22*			9396[g] *3*	(59/2)
4445.0[g] *18*	35/2		6122 *3*	39/2		10054[i] *3*	$57/2^+$
4457.5[f] *15*	$33/2^-$	0.28[b] ps *10*	6126[h] *3*	39/2		11115[i] *3*	$61/2^+$
4583.0 *19*	33/2		6155.0 *22*				
4696.5 *18*	35/2		6248.0 *22*				

[†] From least-squares fit to Eγ values, assuming ΔEγ=0.5 keV uncertainty for each γ rays.
[‡] As proposed by 1996Ro04 from DCO and $\gamma(\theta)$, except as noted.
[#] $9/2^-$, $13/2^-$ from DCO; $9/2^-$ preferred based on available systematics.
[@] $J^\pi=7/2^-$ (1994Va15) not compatible with DCO′s of the upper transitions (particularly the 509.3γ).
[&] $J^\pi=17/2^+$ (1990Ba13,1994Va15) not compatible with 807.5γ DCO and DCO values of γ transitions in the parallel sequence built on the 721 keV, $7/2^+$.
[a] From Adopted Levels.
[b] From DSAM (1996Br33).
[c] Band(A): Band based on $15/2^-$.
[d] Band(B): Band based on $19/2^+$.
[e] Band(C): Band based on $23/2^+$.
[f] Band(D): Band based on $25/2^-$. Possible magnetic-dipole rotational (shears) band with configuration=$\nu h^{-1}_{11/2}\otimes\pi h^{2}_{11/2}$, as interpreted by 1996Br33 based on B(M1)/B(E2) values deduced from their lifetime measurements.
[g] Band(E): Band based on 27/2.
[h] Band(F): Band based on 33/2.
[i] Band(G): $\nu i_{13/2}$ highly-deformed (intruder) band. Q=3.9 *7* from DSAM analysis of 807.9, 885.7, 902.6, 908.0, 969.9 and 1061.0 transitions in this band (1996Ro04). An 1122γ placed as the top transition in 1994Va15 is not confirmed by 1996Ro04, thus omitted here.
[j] Band(H): Band based on 37/2.

^{110}Pd(^{34}S,5nγ) 1996Ro04,1996Br33,1994Va15 (continued)

γ(^{139}Sm)

All data are from 1996Ro04, except as noted.
The A_2 and A_4 coefficients are deduced by 1996Ro04 from $\gamma(\theta)$ data obtained at five angles from 90° to 150° in their previous experiment (reported in 1990Ba13) using ^{114}Cd(^{29}Si,4nγ),E=128 MeV reaction.
The DCO values are from 1996Ro04. DCO(Q) are for gates on on stretched quadrupole transitions (or on a sum of consecutive stretched quadrupole transitions). DCO(D) are for gates on stretched dipole transitions (or on a sum of consecutive stretched dipole transitions). In two cases, DCO(D+Q) values are listed implying gate on a ΔJ=1, D+Q transition.
α(exp) obtained from the analysis of a clean double-gated spectrum with gates set on the transitions belonging to the upper part of the band.

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[&]	Comments
43.6		267.6	5/2$^+$	224.0	(3/2)$^+$			
72.2	6.0 *12*	3327.5	25/2$^-$	3255.2	23/2$^-$	M1[‡]	4.32	α(exp)=3.8 *11* (1996Ro04) α(K)=3.66 *6*; α(L)=0.521 *8*; α(M)=0.1120 *16*; α(N)=0.0254 *4*; α(O)=0.00380 *6* α(P)=0.000234 *4*
91.0	0.8 *3*	2658.5	21/2$^+$	2567.4	19/2$^+$			
108.2	2.0 *6*	2658.5	21/2$^+$	2550.5	19/2$^+$	[#]		
108.3	3.9 *12*	1454.9	13/2$^+$	1346.7	9/2$^+$	[#]		
112.0		111.8	3/2$^+$	0.0	1/2$^+$	D		A_2=−0.20 *3*; A_4=−0.07 *5*
118.6	12.3 *20*	3445.9	27/2$^-$	3327.5	25/2$^-$	M1[‡]	1.039	α(exp)=1.02 *8* (1996Ro04) A_2=−0.33 *4*; A_4=+0.08 *5* DCO(D)=1.08 *17* α(K)=0.881 *13*; α(L)=0.1246 *18*; α(M)=0.0268 *4*; α(N)=0.00607 *9*; α(O)=0.000909 *13* α(P)=5.62×10^{-5} *8*
132.4	15.3 *37*	590.3	9/2$^-$	457.9	11/2$^-$	D		A_2=−0.34 *6*; A_4=−0.09 *8* DCO(D)=0.97 *15*
155.6		267.6	5/2$^+$	111.8	3/2$^+$	D		A_2=−0.18 *3*; A_4=−0.03 *4* DCO(D)=0.94 *15*
189.9	19.8 *31*	721.4	7/2$^+$	531.7	5/2$^+$	D[#]		DCO(Q)=0.53 *10*
190.2		457.9	11/2$^-$	267.6	5/2$^+$	E3[#]		
209.9	29.6 *35*	2868.4	23/2$^+$	2658.5	21/2$^+$	D+Q		A_2=−0.19 *1*; A_4=−0.08 *2* DCO(Q)=0.79 *10* Negative sign of A_4 is inconsistent with ΔJ=1 transition.
214.8	49 *6*	3315.6	27/2	3100.8	25/2$^+$	D		A_2=−0.20 *1*; A_4=−0.06 *1* DCO(Q)=0.52 *5*
222.8	1.7 *6*	3554.7	29/2	3331.9	25/2	(E2)		DCO(D)=1.98 *80*
223.9		224.0	(3/2)$^+$	0.0	1/2$^+$			
227.2	1.7 *5*	3327.5	25/2$^-$	3100.8	25/2$^+$	D		DCO(D)=1.02 *20*
232.3	20.1 *25*	3100.8	25/2$^+$	2868.4	23/2$^+$	D		A_2=−0.22 *2*; A_4=−0.02 *3* DCO(D)=0.94 *10*
243.8	4.2 *9*	5407.9	35/2	5164.1	33/2	D		DCO(D)=1.21 *25*
251.1	0.9 *3*	4696.5	35/2	4445.0	35/2			
260.1	9.0 *11*	2550.5	19/2$^+$	2290.6	17/2$^+$			DCO(D+Q)=1.13 *20*
263.9	4.0 *11*	531.7	5/2$^+$	267.6	5/2$^+$			
265.0	24.5 *27*	3710.9	29/2$^-$	3445.9	27/2$^-$	D		DCO(D)=1.03 *9*
267.6		267.6	5/2$^+$	0.0	1/2$^+$	(E2)		DCO(Q)=1.09 *10*
270.0	8.7 *15*	3554.7	29/2	3284.8	25/2	(E2)		DCO(D)=2.01 *25*
271.8	8.7 *10*	1346.7	9/2$^+$	1075.1	9/2$^+$	D		DCO(Q)=0.81 *20* ΔJ=0 transition.
302.0	0.8 *3*	5714.3	43/2	5412.4	39/2	(E2)		DCO(Q)=0.85 *25*
319.0	6.4 *13*	5726.9	37/2	5407.9	35/2	D		DCO(D)=1.10 *15*

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^{110}Pd(^{34}S,5nγ) 1996Ro04,1996Br33,1994Va15 (continued)

γ(^{139}Sm) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.†	Comments
337.3	20.2 *23*	4048.0	31/2⁻	3710.9	29/2⁻	D	DCO(D)=0.97 *7* B(M1)=1.8 *6* (1996Br33).
342.3	1.7 *4*	2909.3	21/2⁺	2567.4	19/2⁺		
344.5	1.7 *5*	3445.9	27/2⁻	3100.8	25/2⁺	D	DCO(D)=0.80 *27*
368.0	45 *5*	2658.5	21/2⁺	2290.6	17/2⁺	(E2)	A_2=+0.13 *1*; A_4=−0.01 *2* DCO(Q)=0.96 *10*
379.7	20.5 *23*	1454.9	13/2⁺	1075.1	9/2⁺	(E2)	A_2=+0.15 *5*; A_4=−0.21 *7* DCO(Q)=1.01 *7*
383.5	1.1 *4*	3710.9	29/2⁻	3327.5	25/2⁻		
384.2	34.8 *36*	2583.2	23/2⁺	2199.0	19/2⁺	(E2)	A_2=+0.46 *2*; A_4=−0.12 *3* DCO(D)=2.05 *18*
392.4	2.5 *6*	5089.0	39/2	4696.5	35/2	(E2)	DCO(Q)=0.79 *35*
395.1	2.9 *6*	6122	39/2	5726.9	37/2	D	DCO(D)=0.82 *25*
399.3	4.9 *11*	6126	39/2	5726.9	37/2	D	DCO(D)=1.02 *15*
409.4	11.1 *15*	4457.5	33/2⁻	4048.0	31/2⁻	D	DCO(D)=0.95 *10* B(M1)=1.5 *5* (1996Br33).
410.4	12.9 *14*	2290.6	17/2⁺	1880.0	13/2⁺	(E2)	DCO(Q)=0.93 *10*
416.5	43 *4*	1137.8	11/2⁺	721.4	7/2⁺	(E2)	A_2=+0.26 *2*; A_4=+0.07 *2* DCO(D)=1.86 *20* Positive sign of A_4 is inconsistent with ΔJ=2, Q transition.
419.5	42 *4*	2199.0	19/2⁺	1779.5	17/2⁻	D	DCO(Q)=0.52 *5*
420.3	18.1 *31*	531.7	5/2⁺	111.8	3/2⁺	D	DCO(D)=1.19 *25*
421.0	45 *5*	3736.7	31/2	3315.6	27/2	(E2)	DCO(Q)=1.02 *7*
434.1	11.0 *13*	3255.2	23/2⁻	2820.9	23/2⁻		DCO(Q)=0.89 *15*
441.9	49 *5*	3100.8	25/2⁺	2658.5	21/2⁺	(E2)	DCO(Q)=1.08 *10* A_2=+0.12 *2*; A_4=−0.05 *3* A_2,A_4: corrected for a 50% contribution from a 441.9 E2 γ in ^{140}Sm.
453.8	20.5 *32*	721.4	7/2⁺	267.6	5/2⁺	D+Q	A_2=−0.72 *3*; A_4=+0.51 *4* DCO(Q)=0.57 *10*
460.1	6.3 *18*	4014.8	(33/2)	3554.7	29/2	(E2)	DCO(Q)=0.87 *30*
470.9	2.0 *7*	2250.1	19/2⁻	1779.5	17/2⁻		
472.6	6.5 *12*	4930.2	35/2⁻	4457.5	33/2⁻	D	DCO(D)=0.96 *9* B(M1)=1.2 *4* (1996Br33).
477.5	1.5 *5*	1067.8		590.3	9/2⁻		
481.0	6.2 *12*	3349.5	27/2⁺	2868.4	23/2⁺		DCO(D+Q)=1.87
490.7	3.8 *8*	6617	41/2	6126	39/2	D	DCO(D)=1.01 *20*
491.3	1.5 *4*	5935.1	(39/2)	5443.7	37/2⁻		
494.5	1.5 *5*	6617	41/2	6122	39/2	D	DCO(D)=0.90 *25*
506.4	6.7 *13*	3327.5	25/2⁻	2820.9	23/2⁻	D	DCO(D)=1.09 *13*
509.3	54 *5*	2290.6	17/2⁺	1781.3	15/2⁺	D+Q	DCO(Q)=0.72 *10*
513.5	3.4 *7*	5443.7	37/2⁻	4930.2	35/2⁻	D	DCO(D)=1.05 *11*
514.0	27.9 *29*	1969.0	17/2⁺	1454.9	13/2⁺	(E2)	A_2=+0.14 *2*; A_4=−0.02 *3* DCO(Q)=0.98 *7*
515.8	5.6 *6*	1581.9	15/2⁻	1066.0	13/2⁻	D	DCO(Q)=0.52 *8*
519.5	5.5 *15*	4882.0	33/2	4362.8	31/2⁺	D	DCO(Q)=0.65 *18*
526.0	2.0 *6*	5407.9	35/2	4882.0	33/2	D	DCO(D)=0.90 *20*
531.5	4.5 *10*	531.7	5/2⁺	0.0	1/2⁺	(E2)	DCO(D)=1.89 *15*
534	0.8 *4*	1581.9	15/2⁻	1048.0	15/2⁻		
542.5	5.3 *15*	4882.0	33/2	4339.2	31/2⁺	D	DCO(Q)=0.53 *15*
547.4	32.2 *32*	1137.8	11/2⁺	590.3	9/2⁻	D	A_2=−0.15 *1*; A_4=+0.05 *2* DCO(D)=0.94 *10*
550.7	2.3 *5*	5963.0	41/2	5412.4	39/2	D	DCO(Q)=0.43 *11*
560.0	1.2 *4*	6495.1	(41/2)	5935.1	(39/2)		
560.5	1.2 *4*	7177	43/2	6617	41/2	D	DCO(D)=1.17 *25*
577.2	2.7 *9*	7194	43/2	6617	41/2	D	DCO(D)=0.89 *25*

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^{110}Pd(^{34}S,5nγ) 1996Ro04,1996Br33,1994Va15 (continued)

γ(^{139}Sm) (continued)

Eγ	Iγ	Ei(level)	J^{π}_i	E_f	J^{π}_f	Mult.[†]	Comments
583.5	6.9 13	3255.2	23/2−	2671.5	21/2−	D	DCO(Q)=0.48 7
590.0	100.0	1048.0	15/2−	457.9	11/2−	(E2)	A_2=+0.31 1; A_4=−0.08 2 DCO(Q)=1.01 5
601.9	5.9 9	4048.0	31/2−	3445.9	27/2−	(E2)	Mult.: D,E2 from comparison to RUL; ΔJ^{π}=2, from level scheme. B(E2)=0.39 13 (1996Br33).
608.2	27.0 32	1066.0	13/2−	457.9	11/2−	D+Q	A_2=−1.19 12; A_4=+0.27 17 DCO(Q)=0.37 8
609.5[@]	11.2 14	3518.7	25/2+	2909.3	21/2+	Q	DCO(Q)=0.94 10
618.5[@]	11.6 15	2909.3	21/2+	2290.6	17/2+	Q	DCO(Q)=1.03 10
625.3	12.8 15	5714.3	43/2	5089.0	39/2	Q	DCO(Q)=0.96 8
625.4	1.8 5	3445.9	27/2−	2820.9	23/2−	Q	DCO(Q)=1.70 40
643.7	66 7	1781.3	15/2+	1137.8	11/2+	Q[#]	DCO(Q)=1.10 19
644.1	25.3 28	5089.0	39/2	4445.0	35/2	Q[#]	DCO(Q)=0.94 9
646.2	9.9 14	4164.9	29/2+	3518.7	25/2+	Q	DCO(Q)=1.02 10
656	0.7 4	3327.5	25/2−	2671.5	21/2−		
662.0	1.5 5	8069.2		7407.2	51/2		
668.5	4.2 6	2250.1	19/2−	1581.9	15/2−	Q	DCO(D)=2.04 25
669.1	2.0 6	3327.5	25/2−	2658.5	21/2+		
680.0	7.4 10	4844.8	33/2+	4164.9	29/2+	Q	DCO(Q)=1.04 9
682.5	4.3 10	5963.0	41/2	5280.5	37/2	Q	DCO(Q)=1.03 12
689.5	27.5 29	2658.5	21/2+	1969.0	17/2+	Q	DCO(Q)=1.02 10
701.3	1.5 5	8069.2		7367.9	51/2		
701.6	13.6 16	3284.8	25/2	2583.2	23/2+	D	DCO(Q)=0.46 6
708.1	34 4	4445.0	35/2	3736.7	31/2	Q	DCO(Q)=0.99 7
708.4	1.0 3	2290.6	17/2+	1581.9	15/2−		
713.5	1.5 5	1781.3	15/2+	1067.8			
713.7	16.6 17	1779.5	17/2−	1066.0	13/2−	Q	DCO(D)=1.82 25
722.0	1.5 4	5579.4	37/2+	4857.4	33/2+	(Q)	DCO(D)=1.50 75
731.6	44.0 31	1779.5	17/2−	1048.0	15/2−	D+Q	A_2=−0.83 2; A_4=+0.06 3 DCO(Q)=0.27 3
734.6	7.0 10	5579.4	37/2+	4844.8	33/2+	Q	DCO(Q)=0.97 10
740	1.0 3	5323.0	35/2	4583.0	33/2	D	DCO(D)=1.06 20
742.1	13.7 15	1880.0	13/2+	1137.8	11/2+	D	DCO(Q)=0.61 11
746.6	4.0 8	4457.5	33/2−	3710.9	29/2−	(E2)	Mult.: D,E2 from comparison to RUL; ΔJ^{π}=2 from level scheme. B(E2)=0.23 8 (1996Br33).
748.6	5.0 10	3331.9	25/2	2583.2	23/2+	D	DCO(Q)=0.41 19
775.6	4.6 12	4125.1	31/2+	3349.5	27/2+	Q	DCO(Q)=1.14 15
775.8	8.8 13	6490.2	47/2	5714.3	43/2	Q	DCO(Q)=1.04 9
784.3	2.8 5	4339.2	31/2+	3554.7	29/2		
786.2	5.7 6	2567.4	19/2+	1781.3	15/2+	Q	DCO(Q)=1.08 25
787.5	3.0 9	2658.5	21/2+	1870.9	19/2−		
800.5	9.8 13	2671.5	21/2−	1870.9	19/2−	D	DCO(Q)=0.54 9
807.5	34.9 36	1075.1	9/2+	267.6	5/2+	Q	DCO(Q)=0.98 7
807.9	7.7 8	6387.3	41/2+	5579.4	37/2+	Q	DCO(Q)=1.02 11
808.3	3.1 7	4362.8	31/2+	3554.7	29/2	D	DCO(D)=1.22 40
822.9	48.1 34	1870.9	19/2−	1048.0	15/2−	Q	A_2=+0.26 2; A_4=−0.17 3 DCO(Q)=0.98 6
827.7	13.7 16	3410.9	27/2+	2583.2	23/2+	Q	DCO(Q)=1.01 11
835.2	3.1 8	4120.0	29/2	3284.8	25/2	Q	DCO(D)=1.67 50
835.4	4.6 6	5280.5	37/2	4445.0	35/2	D	DCO(Q)=0.61 15
846.3	3.9 6	4583.0	33/2	3736.7	31/2	D	DCO(Q)=0.55 10
877.8	3.2 6	7367.9	51/2	6490.2	47/2	Q	DCO(Q)=0.84 20
880.1	0.8 3	8287	(55/2)	7407.2	51/2		

Continued on next page (footnotes at end of table)

^{110}Pd(^{34}S,5nγ) 1996Ro04,1996Br33,1994Va15 (continued)

γ(^{139}Sm) (continued)

E_γ	I_γ	E_i(level)	J^π_i	E_f	J^π_f	Mult.†	Comments
882.3	4.6 *9*	4930.2	35/2−	4048.0	31/2−	(E2)	B(E2)=0.25 *8* (1996Br33). Mult.: D,E2 from comparison to RUL (evaluators); ΔJ^π=2, from level scheme.
885.7	3.1 *6*	7273.0	45/2+	6387.3	41/2+	Q	DCO(Q)=0.91 *15*
891.9	6.9 *10*	2671.5	21/2−	1779.5	17/2−	Q	DCO(D)=2.09 *35*
902.6	2.3 *5*	8175.6	49/2+	7273.0	45/2+	Q	DCO(Q)=1.04 *18*
908.0	1.9 *5*	9084	53/2+	8175.6	49/2+	Q	DCO(Q)=0.95 *18*
917.0	4.3 *8*	7407.2	51/2	6490.2	47/2	Q	DCO(Q)=0.96 *10*
928.1	7.0 *12*	4339.2	31/2+	3410.9	27/2+	Q	DCO(Q)=0.98 *9*
937.6	3.4 *7*	6900.6	45/2	5963.0	41/2	Q	DCO(Q)=1.05 *15*
950.1	23.7 *24*	2820.9	23/2−	1870.9	19/2−	Q	DCO(Q)=0.97 *7*
952.1	6.0 *13*	4362.8	31/2+	3410.9	27/2+	Q	DCO(Q)=1.35 *40*
960.0	2.5 *6*	4696.5	35/2	3736.7	31/2	(Q)	DCO(Q)=0.85 *40*
967.4	6.7 *11*	5412.4	39/2	4445.0	35/2	Q	DCO(Q)=0.98 *12*
969.9	1.6 *5*	10054	57/2+	9084	53/2+	Q	DCO(Q)=1.08 *22*
986.2	2.3 *6*	5443.7	37/2−	4457.5	33/2−		
987	0.8 *3*	7235.0		6248.0			
1005.0	3.4 *10*	5935.1	(39/2)	4930.2	35/2−		
1005.2	7.6 *13*	3255.2	23/2−	2250.1	19/2−	Q	DCO(Q)=2.15 *25*
1014.8	1.0 *3*	6103.8		5089.0	39/2		
1021.2	1.3 *4*	5146.3	35/2+	4125.1	31/2+	Q	DCO(Q)=1.07 *30*
1039.4	1.2 *4*	5484.4	(39/2)	4445.0	35/2	Q	DCO(Q)=1.05 *77*
1044	0.9 *3*	5164.1	33/2	4120.0	29/2		
1051.4	1.5 *5*	6495.1	(41/2)	5443.7	37/2−		
1061.0	1.5 *4*	11115	61/2+	10054	57/2+	Q	DCO(Q)=90 *26*
1066	1.0 *3*	6155.0		5089.0	39/2		
1079.0	5.3 *6*	1346.7	9/2+	267.6	5/2+	Q	DCO(Q)=0.96 *15*
1108.0	1.5 *4*	4844.8	33/2+	3736.7	31/2	D	DCO(Q)=0.51 *15*
1108.5	0.8 *4*	9396	(59/2)	8287	(55/2)		
1118	0.9 *3*	8525		7407.2	51/2		
1120.7	2.0 *5*	4857.4	33/2+	3736.7	31/2	D	DCO(Q)=0.55 *18*
1131	1.1 *3*	8031.6	(49/2)	6900.6	45/2		
1159	1.4 *4*	6248.0		5089.0	39/2		
1189.9	1.1 *3*	6602.3		5412.4	39/2		
1201.7	1.9 *7*	2250.1	19/2−	1048.0	15/2−		
1242.9	1.8 *4*	2290.6	17/2+	1048.0	15/2−	D	DCO(Q)=0.48 *15*
1384.2	9.4 *11*	3255.2	23/2−	1870.9	19/2−	Q	A_2=+0.30 *5*; A_4=−0.15 *7* DCO(Q)=0.96 *10*

† From DCO and γ(θ), except as noted. Mult=Q indicates stretched quadrupole (most likely E2) and mult=D or D+Q indicates ΔJ=1, dipole. For γ transitions up to 600 keV, stretched quadrupoles are assigned (E2) from RUL for E2 and M2, assuming that level half-lives are less than 10 ns.

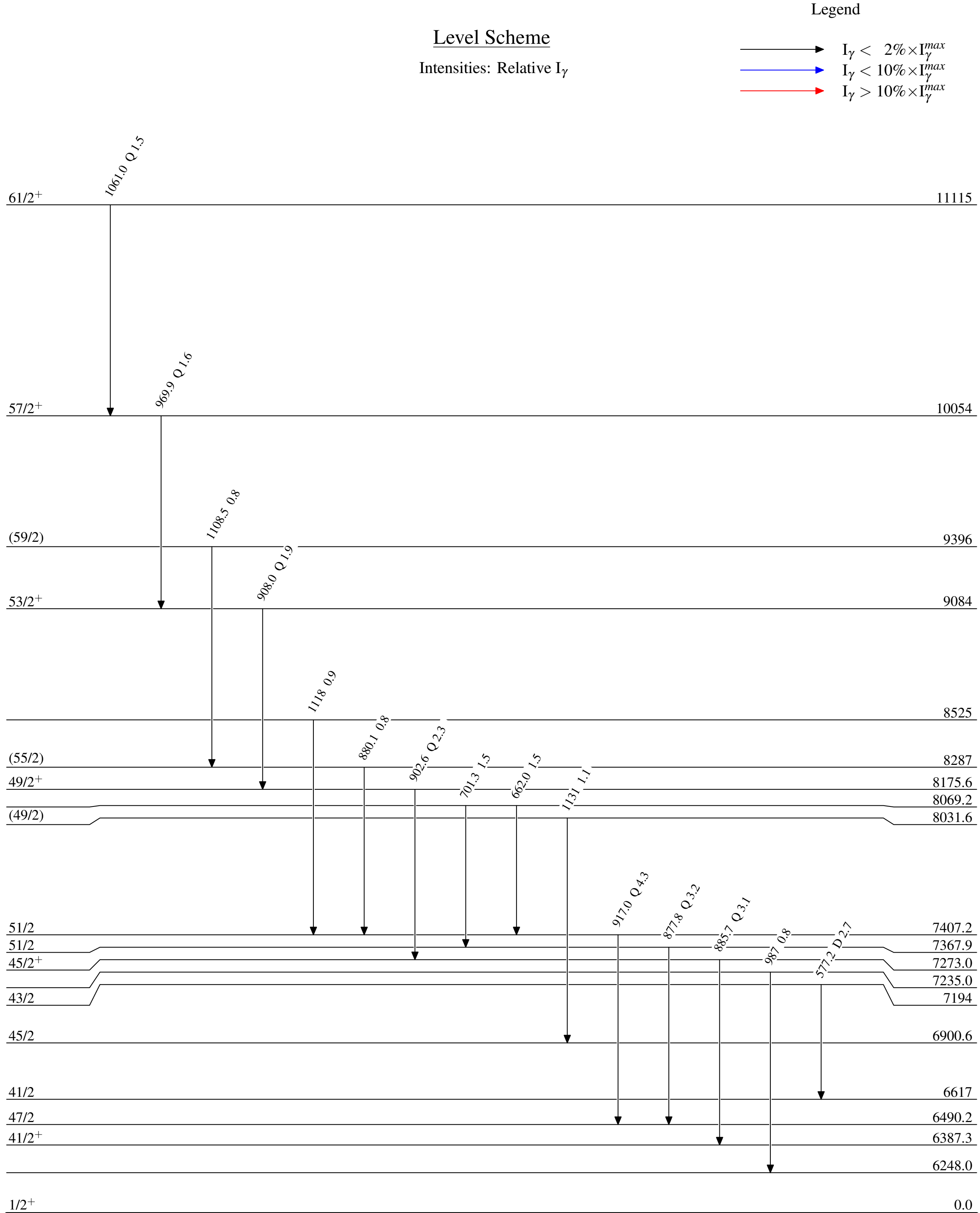
‡ From comparison of α(exp) (1996Ro04) to theory.

A_2=+0.10 *9*, A_4=0 for 108.2+108.3 γ rays. A_2=−0.05 *3*, A_4=−0.09 *4* for 190.2+189.9 γ′s. A_2=+0.11 2, A_4=+0.06 2 for 643.7+644.1 γ rays.

@ 1994Va15 considered 609.5γ as a linking transition. Present work indicates that it is a member of the highly deformed band and that 618.5γ is the linking transition.

& Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

$^{110}Pd(^{34}S,5n\gamma)$ 1996Ro04,1996Br33,1994Va15

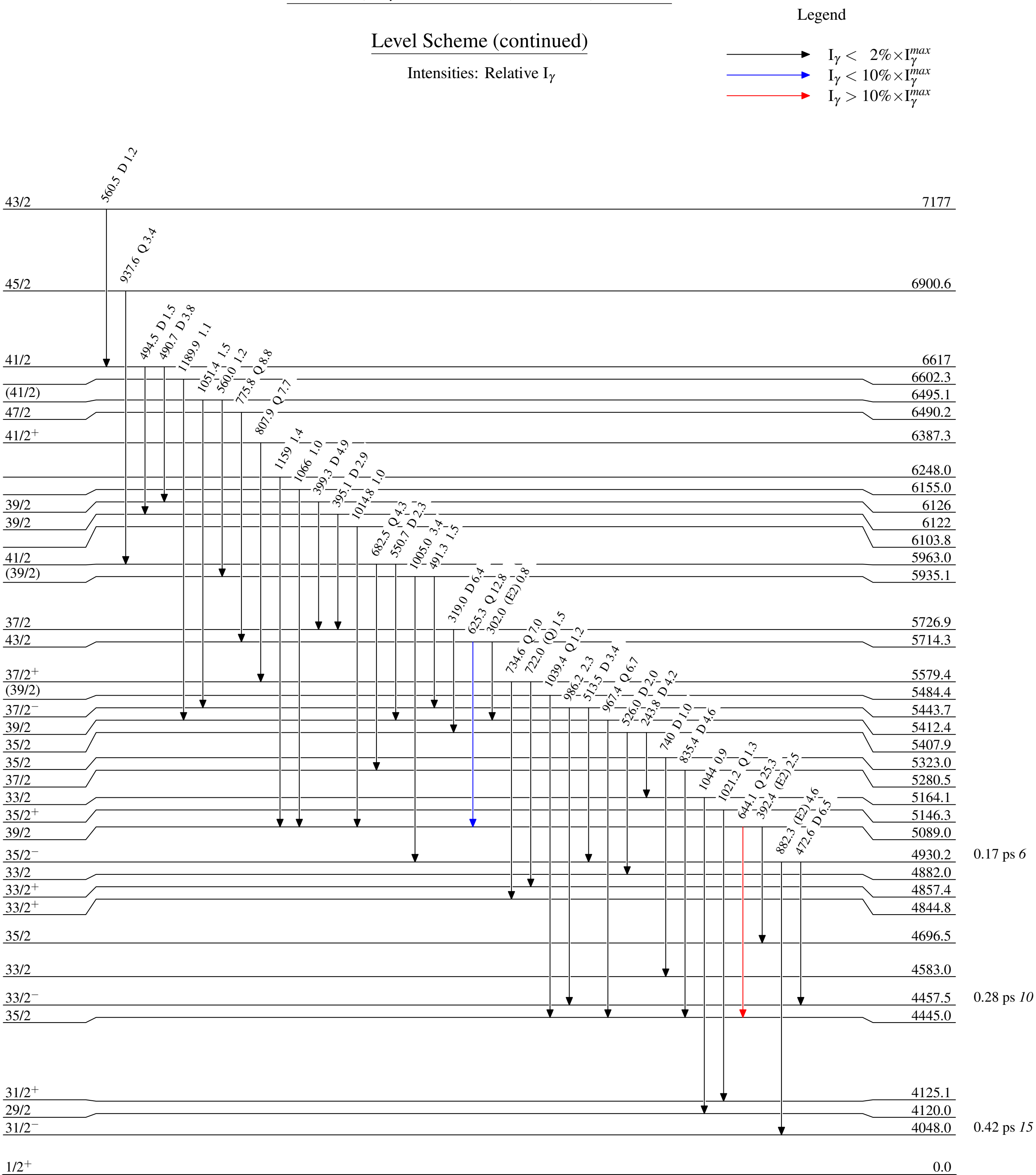


$^{139}_{62}Sm_{77}$

$^{110}Pd(^{34}S,5n\gamma)$ 1996Ro04,1996Br33,1994Va15

Level Scheme (continued)

Intensities: Relative I_γ



$^{139}_{62}Sm_{77}$

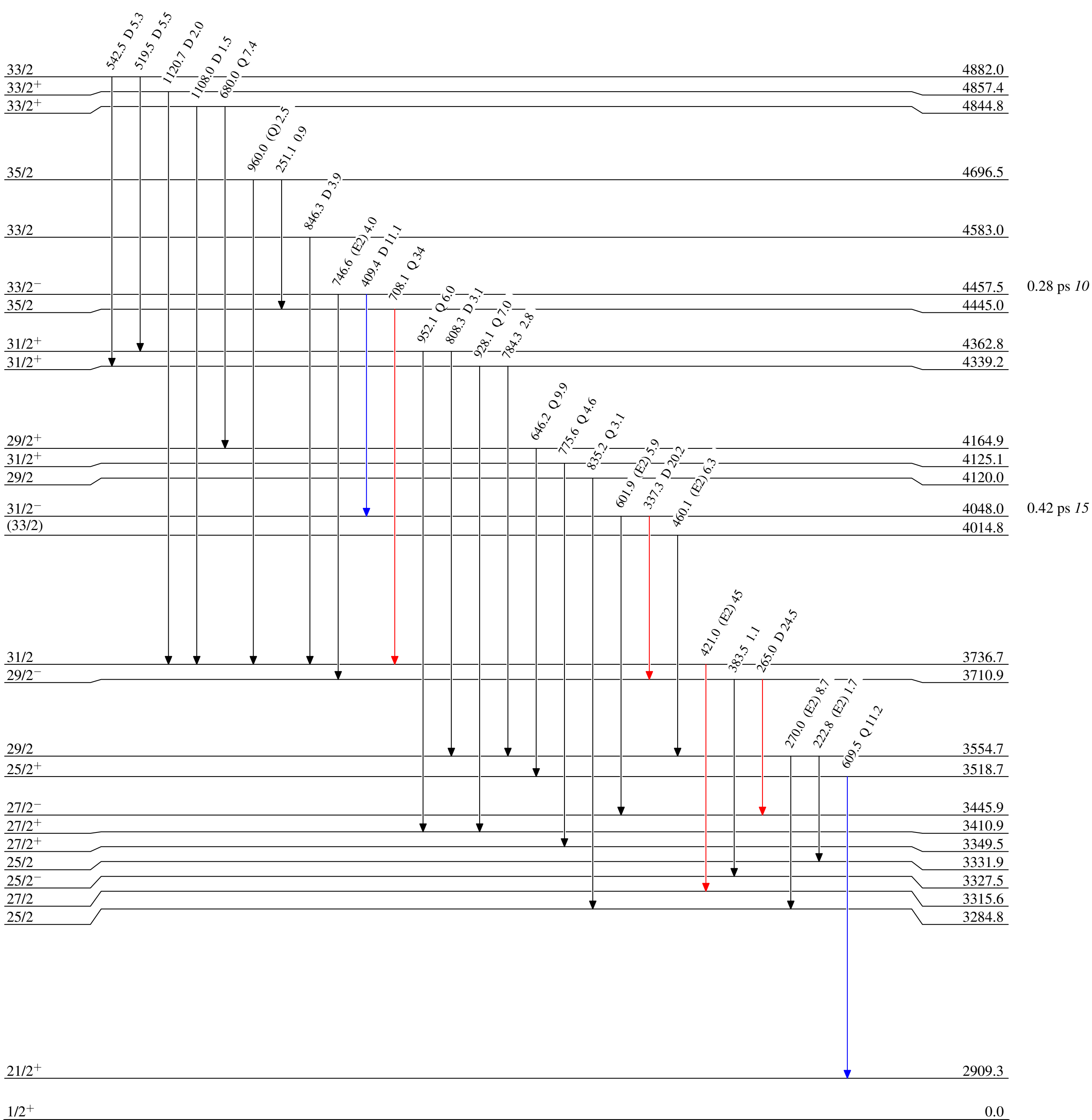
^{110}Pd(^{34}S,5nγ) 1996Ro04,1996Br33,1994Va15

Level Scheme (continued)

Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$

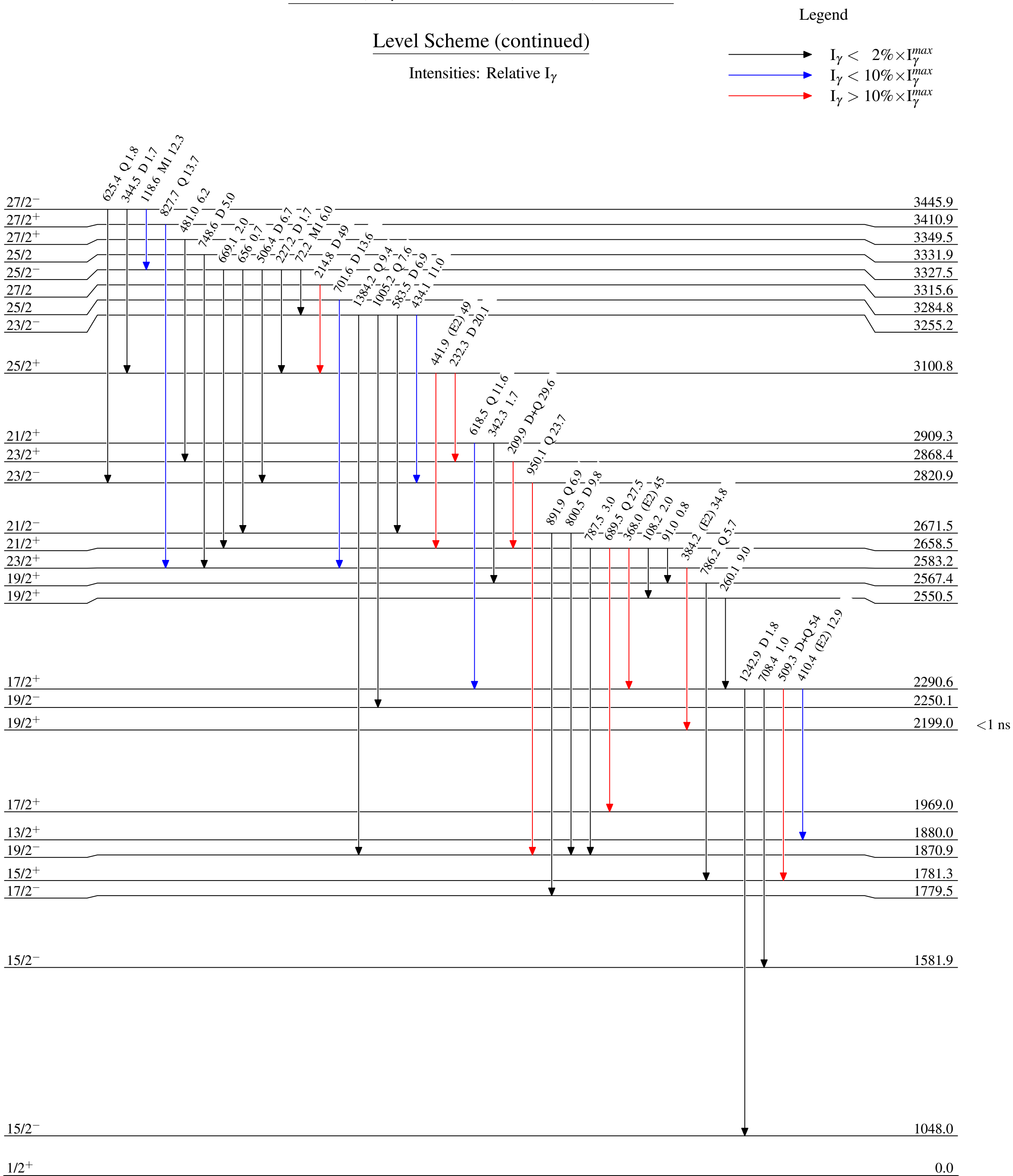


$^{139}_{62}Sm_{77}$

$^{110}Pd(^{34}S,5n\gamma)$ 1996Ro04,1996Br33,1994Va15

Level Scheme (continued)

Intensities: Relative I_γ

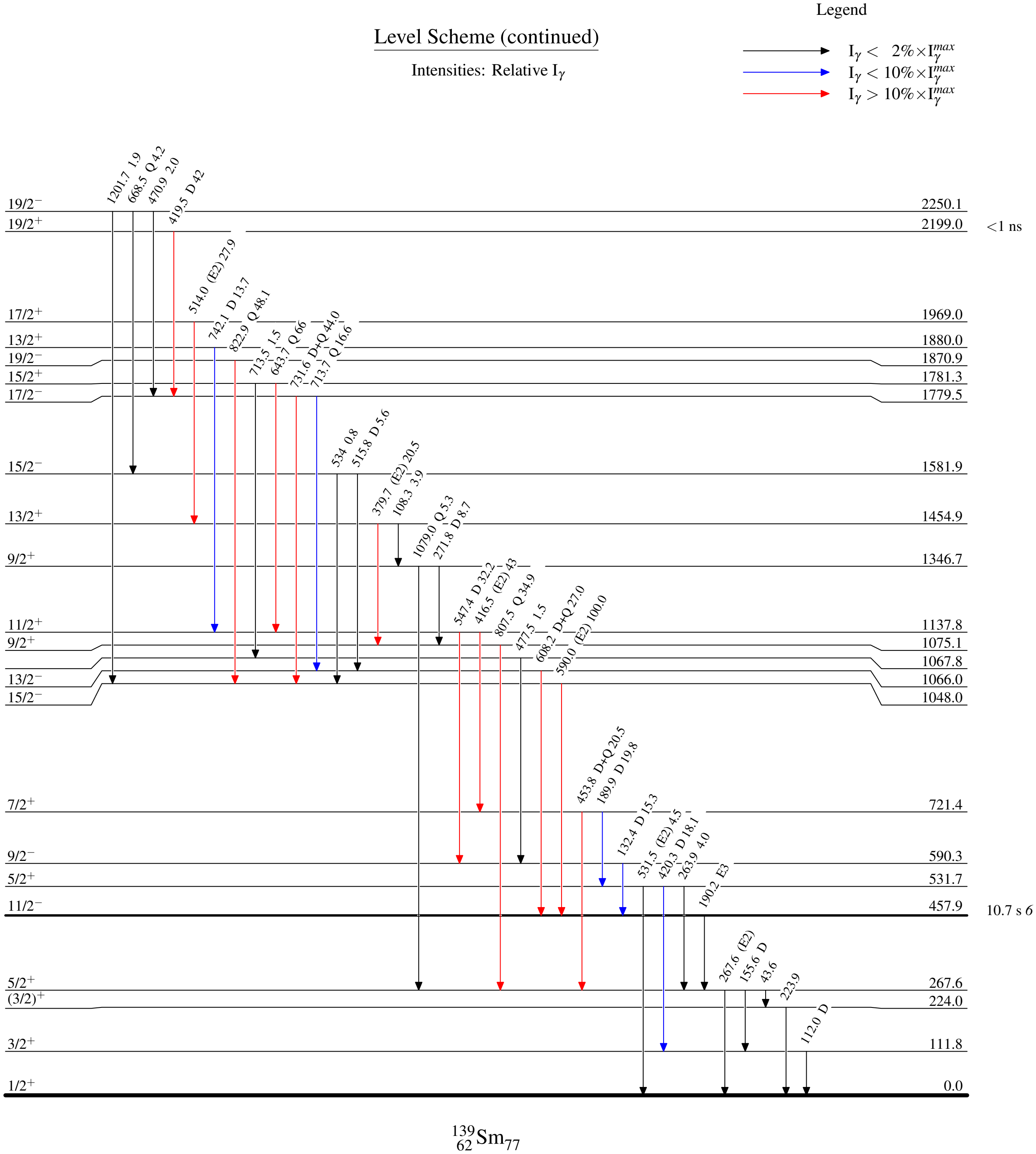


$^{139}_{62}Sm_{77}$

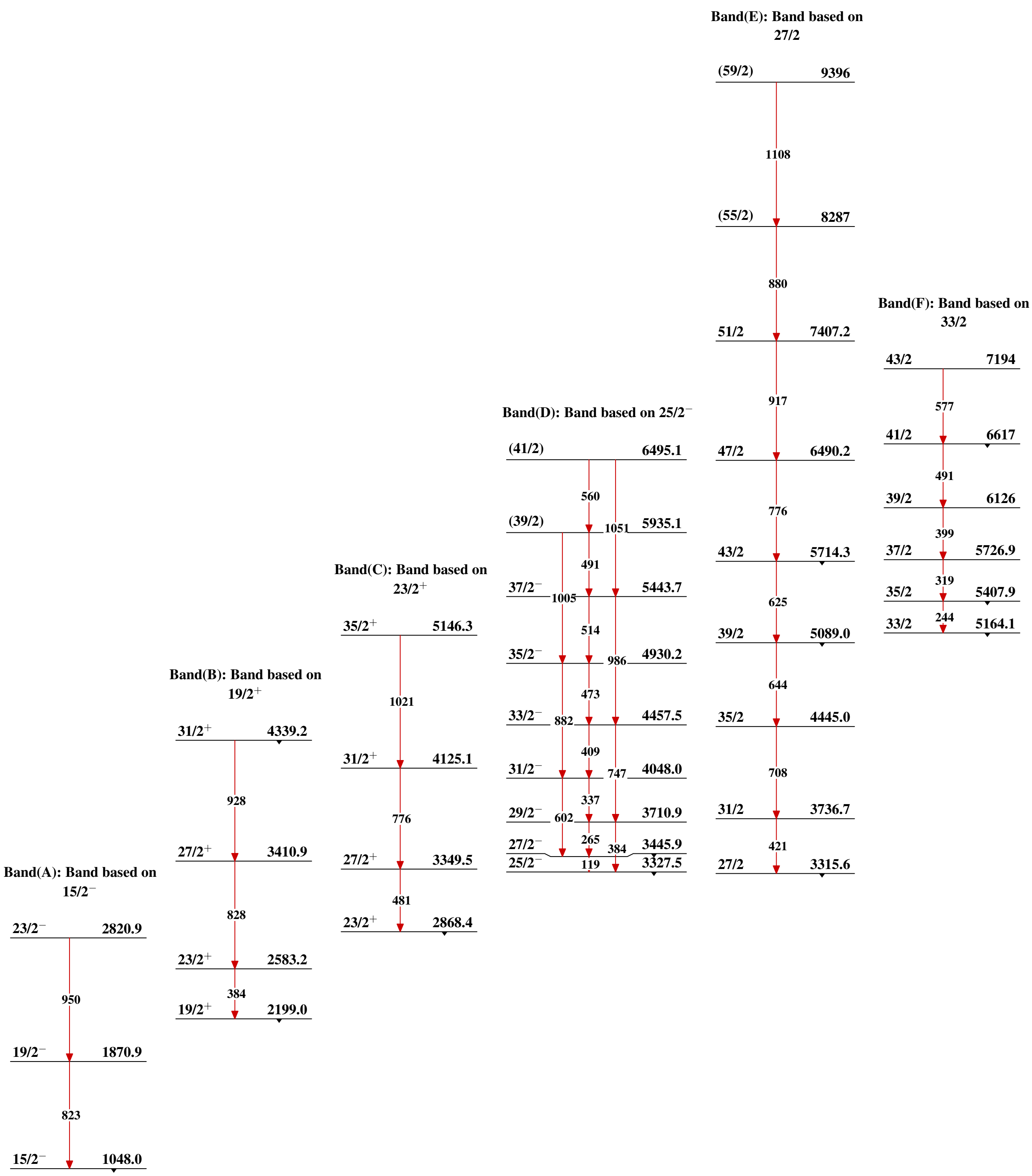
^{110}Pd(^{34}S,5nγ) 1996Ro04,1996Br33,1994Va15

Level Scheme (continued)

Intensities: Relative I_γ

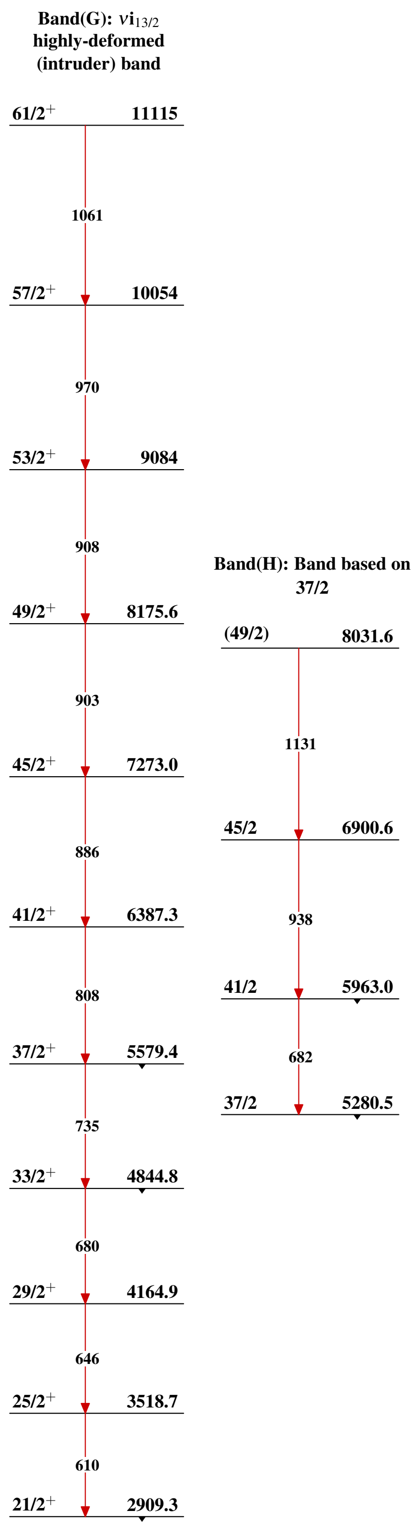


$^{110}Pd(^{34}S,5n\gamma)$ 1996Ro04,1996Br33,1994Va15



$^{139}_{62}Sm_{77}$

^{110}Pd(^{34}S,5nγ) 1996Ro04,1996Br33,1994Va15 (continued)



$^{139}_{62}Sm_{77}$