$^{40}Ca(^{40}Ca,4p\gamma)$ 2005Va09

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Jun Chen and Ameenah R. Farhan	NDS 194,3 (2024)	8-Jan-2024

2005Va09 (also 2005Va18): E=165 MeV. Measured Eγ, Iγ, γγ-coin, γγ(DCO), lifetimes by DSA method, charged particle-γ(coin) using Gammasphere array with 99 Compton-suppressed HPGe detectors at ATLAS-ANL facility. Charged particles were detected and identified with a 95-element CsI(Tl) Microball detector.

2005Go43: E=147 MeV. Measured Eγ, γγ-coin, lifetimes by recoil-distance Doppler-shift (RDDS) method using GASP array of 32 Compton-suppressed HPGe detectors and inner ball of BGO scintillators.

^{76}Kr Levels

E(level)[†]	Jπ[‡]	Comments
0.0[#]	0+	
424.7[#] 8	2+	
1036.0[#] 10	4+	
1222.3[a] 8	2+	
1734.7[b] 10	3+	
1861.9[#] 11	6+	Q(transition)=2.81 +6−10.
1959.2[a] 11	4+	
2228.5[e] 11	2−	
2259.7[f] 11	3−	
2454.6[b] 11	5+	
2623.4[e] 10	4−	
2685.7[f] 11	5−	
2743.9[g] 12	4−	
2765.5[a] 13	6+	
2846.6[@] 11	4+	
2882.5[#] 13	8+	Q(transition)=2.77 +2−15.
2946.5[h] 12	5−	
3097.8[&] 10	5+	
3177.4[e] 11	6−	
3291.4[f] 12	7−	
3298.1[g] 12	6−	
3335.5[b] 12	7+	
3408.1[@] 11	6+	
3573.7[a] 12	8+	
3576.4[h] 13	7−	
3783.7[&] 12	7+	
3903.5[e] 13	8−	
4071.5[#] 16	10+	Q(transition)=2.66 +15−9.
4076.4[f] 16	9−	Q(transition)=3.54 +14−11.
4120.1[g] 15	8−	
4219.6[@] 13	8+	
4383.0[b] 14	9+	
4436.6[a] 14	10+	
4472.5[h] 17	9−	
4702.3[&] 14	9+	
4810.5[e] 17	10−	Q(transition)=3.48 +17−13.

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^{40}Ca(^{40}Ca,4pγ) 2005Va09 (continued)

^{76}Kr Levels (continued)

E(level)[†]	Jπ[‡]	Comments
5055.3[f] *19*	11⁻	Q(transition)=3.95 *+21−10*.
5108.1[g] *18*	10⁻	
5242.4[@] *15*	10⁺	
5351.5[#] *19*	12⁺	
5531.5[h] *19*	11⁻	
5569.6[a] *17*	12⁺	
5592.0[b] *17*	11⁺	
5797.5[&] *15*	11⁺	
5877.5[e] *19*	12⁻	Q(transition)=5.3 *+3−4*.
6220.1[g] *21*	12⁻	
6226.4[f] *21*	13⁻	
6392.1[@] *16*	12⁺	
6608.5[c] *22*	(12⁺)	
6653.5[#] *22*	14⁺	
6684.5[h] *22*	13⁻	
6940.0[b] *20*	13⁺	
7034.3[&] *17*	13⁺	
7037.6[a] *20*	14⁺	
7114.5[e] *22*	14⁻	
7437.1[g] *23*	14⁻	
7556.2[@] *17*	14⁺	
7587.4[f] *24*	15⁻	
7609.5[c] *24*	(14⁺)	
7873.5[h] *24*	15⁻	
8003.5[#] *24*	16⁺	
8435.1[b] *22*	15⁺	
8525.5[e] *24*	16⁻	Q(transition)=2.59 *10*.
8669.6[a] *22*	16⁺	
8719[g] *3*	16⁻	
8802[c] *3*	(16⁺)	
8831.2[@] *20*	16⁺	
9121[f] *3*	17⁻	Q(transition)=2.86 *10*.
9221[h] *3*	17⁻	
9404[#] *3*	18⁺	Q(transition)=2.29 *10*.
10053.1[b] *24*	17⁺	
10064[e] *3*	18⁻	Q(transition)=2.54 *10*.
10137[g] *3*	18⁻	
10143[c] *3*	(18⁺)	
10473.7[a] *24*	(18⁺)	
10644[f] *3*	19⁻	Q(transition)=2.81 *10*.
10777[h] *3*	(19⁻)	
10940[#] *3*	20⁺	Q(transition)=2.25 *10*.
11660[e] *3*	20⁻	Q(transition)=2.47 *10*.
11668[c] *3*	(20⁺)	
11721[g] *3*	20⁻	
11788[b] *3*	(19⁺)	

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^{40}Ca(^{40}Ca,4pγ) 2005Va09 (continued)

^{76}Kr Levels (continued)

E(level)[†]	Jπ[‡]	Comments
12258[f] 3	21−	Q(transition)=2.76 10.
12401[a] 3	(20+)	
12496[h] 3	(21−)	
12699[#] 3	22+	Q(transition)=2.20 10.
13357[e] 3	22−	Q(transition)=2.40 10.
13391[c] 3	(22+)	
13502[g] 3	(22−)	
13616[b] 3	(21+)	
14030[f] 3	23−	Q(transition)=2.70 10.
14443[h] 4	(23−)	
14754[#] 3	24+	Q(transition)=2.15 10.
15230[e] 4	24−	Q(transition)=2.32 10.
15349[c] 4	(24+)	
15505[g] 4	(24−)	
16013[f] 4	25−	Q(transition)=2.63 10.
16653[h] 4	(25−)	
17160[#] 4	26+	Q(transition)=2.08 10.
17332[e] 4	26−	Q(transition)=2.22 10.
17553[c] 4	(26+)	
17861[g] 4	(26−)	
18260[f] 4	27−	Q(transition)=2.55 10.
19175[h] 4	(27−)	
19746[e] 4	28−	Q(transition)=2.10 10.
19953[#] 4	28+	Q(transition)=2.00 10.
20048[c] 4	(28+)	
20539[g] 4	(28−)	
20819[f] 4	29−	Q(transition)=2.45 10.
22588[e] 4	(30−)	Q(transition)=1.80 10.
22793[c] 4	(30+)	
23160[#] 4	(30+)	Q(transition)=1.80 10.
23746[f] 4	(31−)	Q(transition)=2.20 10.
25873[e] 4	(32−)	
27087[f] 4	(33−)	
x[d]	(11+)	
966.0+x[d] 10	(13+)	
2097.0+x[d] 15	(15+)	
3390.0+x[d] 18	(17+)	
4847.0+x[d] 20	(19+)	
6472.1+x[d] 23	(21+)	
8309.1+x[d] 25	(23+)	
10382+x[d] 3	(25+)	
12696+x[d] 3	(27+)	
15234+x[d] 3	(29+)	

† From a least-squares fit to Eγ data.

‡ As proposed in 2005Va09 based on measured γγ(DCO) and band assignments. When considered in Adopted Levels, those firm

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^{40}Ca(^{40}Ca,4pγ) 2005Va09 (continued)

^{76}Kr Levels (continued)

assignments of excited states will be placed in parentheses if strong arguments lacking.

Band(A): g.s. band. Terminating state at 30$^+$ is proposed (2005Va09) with configuration= $\pi[((g_{9/2})^2_8)((f_{5/2},p_{3/2})^6_6)]_{14}$ $\otimes\nu[((g_{9/2})^4_{12})((f_{5/2},p_{3/2})^8_4)]_{16}$ and for 26$^+$ state: $\pi[((g_{9/2})^2_8)((f_{5/2},p_{3/2})^6_4)]_{12}$ $\otimes\nu[((g_{9/2})^4_{12})((f_{5/2},p_{3/2})^8_2)]_{14}$. Q(transition) decreases from 2.3 to 1.8 from 18$^+$ to 30$^+$.

@ Band(B): Band based on 4$^+$,α=0.

& Band(b): Band based on 5$^+$,α=1.

a Band(C): Band based on 2$^+$,α=0.

b Band(c): Band based on 3$^+$,α=1.

c Band(D): Band based on 12$^+$,α=0.

d Band(d): Band based on 11$^+$,α=1.

e Band(E): π3/2[431]$\otimes\pi$3/2[312],α=0. Q(transition) decreases from 2.6 to 1.8 from 16$^-$ to 30$^-$. Terminating state at 32$^-$ has configuration= $\pi[((g_{9/2})^3_{21/2})((f_{5/2},p_{3/2})^5_{11/2})]_{16}$ $\otimes\nu[((g_{9/2})^4_{12})((f_{5/2},p_{3/2})^6_4)]_{16}$.

f Band(e): π3/2[431]$\otimes\pi$3/2[312],α=1. Q(transition) decreases from 2.9 to 2.2 from 17$^-$ to 31$^-$.

g Band(F): ν3/2[301]$\otimes\nu$5/2[422],α=0.

h Band(f): ν3/2[301]$\otimes\nu$5/2[422],α=1.

γ(^{76}Kr)

DCO ratios are for gates on ΔJ=2, quadrupole transitions, unless otherwise indicated. Expected DCO ratio are ≈1.0 for stretched quadrupole and ≈0.55 for stretched dipole transitions (2005Va09).

E_γ[†]	I_γ[†]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	Comments
223 1	0.3	2846.6	4$^+$	2623.4	4$^-$		
231 1	0.5	3408.1	6$^+$	3177.4	6$^-$		
252 1	1.5	3097.8	5$^+$	2846.6	4$^+$	D[#]	DCO=1.02 7
261 1	1.2	2946.5	5$^-$	2685.7	5$^-$	D[@]	DCO=0.99 7
285 1	0.8	3576.4	7$^-$	3291.4	7$^-$		
311 1	1.6	3408.1	6$^+$	3097.8	5$^+$	D[#]	DCO=0.97 4
354 1	0.3	3097.8	5$^+$	2743.9	4$^-$	D[#]	DCO=1.12 54
376 1	1.5	3783.7	7$^+$	3408.1	6$^+$	D[#]	DCO=1.02 5
395 1	1.3	2623.4	4$^-$	2228.5	2$^-$	Q	DCO=0.88 9
412 1	0.8	3097.8	5$^+$	2685.7	5$^-$	D[#@]	DCO=2.17 22
425 1	100	424.7	2$^+$	0.0	0$^+$	Q	DCO=0.881 8
426 1	1.0	2685.7	5$^-$	2259.7	3$^-$		
436 1	1.1	4219.6	8$^+$	3783.7	7$^+$	D[#]	DCO=0.94 5
461 1	0.5	3408.1	6$^+$	2946.5	5$^-$	D[#]	DCO=1.16 13
483 1	0.7	4702.3	9$^+$	4219.6	8$^+$	D[#]	DCO=0.77 6
521 1	0.3	7556.2	14$^+$	7034.3	13$^+$	D[#]	DCO=0.78 8
541 1	0.5	5242.4	10$^+$	4702.3	9$^+$	D[#]	DCO=0.93 9
554 1	3.8	3177.4	6$^-$	2623.4	4$^-$	Q	DCO=0.94 3
554 1	0.7	3298.1	6$^-$	2743.9	4$^-$	Q	DCO=0.89 6
555 1	0.5	5797.5	11$^+$	5242.4	10$^+$	D[#]	DCO=1.21 14
561 1	0.9	3408.1	6$^+$	2846.6	4$^+$	Q[#]	DCO=1.71 26
568 1	1.5	3903.5	8$^-$	3335.5	7$^+$	D	DCO=0.64 6
596 1	0.3	6392.1	12$^+$	5797.5	11$^+$	(D)[#]	DCO=1.10 68
606 1	8.5	3291.4	7$^-$	2685.7	5$^-$	Q	DCO=0.97 2
611 1	87	1036.0	4$^+$	424.7	2$^+$	Q	DCO=1.000 11
630 1	1.7	3576.4	7$^-$	2946.5	5$^-$		
643 1	0.5	7034.3	13$^+$	6392.1	12$^+$	D[#]	DCO=1.07 14

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$^{40}Ca(^{40}Ca,4p\gamma)$ 2005Va09 (continued)

$\gamma(^{76}Kr)$ (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult. ‡	Comments
675 1	2.9	3298.1	6^-	2623.4	4^-	Q	DCO=0.81 4
686 1	0.9	3783.7	7^+	3097.8	5^+	Q#	DCO=1.72 26
699 1	1.4	1734.7	3^+	1036.0	4^+		
720 1	3.9	2454.6	5^+	1734.7	3^+	Q	DCO=1.09 8
723 1	4.2	3177.4	6^-	2454.6	5^+	D	DCO=0.70 4
726 1	10.1	3903.5	8^-	3177.4	6^-	Q	DCO=0.87 2
737 1	3.1	1959.2	4^+	1222.3	2^+	Q	DCO=0.97 11
785 1	12.8	4076.4	9^-	3291.4	7^-	[E2]	
798 1	3.4	1222.3	2^+	424.7	2^+	D+Q@	DCO=0.74 10
806 1	3.3	2765.5	6^+	1959.2	4^+	Q	DCO=1.00 5
808 1	2.1	3573.7	8^+	2765.5	6^+	Q	DCO=1.00 5
811 1	1.0	4219.6	8^+	3408.1	6^+	Q#	DCO=2.26 19
822 1	4.8	4120.1	8^-	3298.1	6^-	Q	DCO=1.04 4
826 1	60	1861.9	6^+	1036.0	4^+	E2&	DCO=1.069 13
863 1	2.5	4436.6	10^+	3573.7	8^+		
880 1	3.2	3335.5	7^+	2454.6	5^+	Q	DCO=0.98 5
889 1	3.0	2623.4	4^-	1734.7	3^+	D	DCO=0.69 5
896 1	3.5	4472.5	9^-	3576.4	7^-	Q	DCO=1.04 5
907 1	9.3	4810.5	10^-	3903.5	8^-	[E2]	
919 1	1.2	4702.3	9^+	3783.7	7^+	Q#	DCO=2.18 16
923 1	3.8	1959.2	4^+	1036.0	4^+	D+Q@	DCO=0.67 8
966 1	1.0	966.0+x	(13^+)	x	(11^+)		
979 1	10.7	5055.3	11^-	4076.4	9^-	E2&	DCO=1.07 2
988 1	3.9	5108.1	10^-	4120.1	8^-		
1001 1	0.4	7609.5	(14^+)	6608.5	(12^+)		
1009 1	1.0	2743.9	4^-	1734.7	3^+	D	DCO=0.64 8
1021 1	43	2882.5	8^+	1861.9	6^+	E2&	DCO=1.098 16 E_γ: 1019.7 (2005Go43).
1022 1	1.2	5242.4	10^+	4219.6	8^+	Q#	DCO=1.86 19
1047 1	3.3	4383.0	9^+	3335.5	7^+		
1059 1	3.4	5531.5	11^-	4472.5	9^-	Q	DCO=1.02 5
1067 1	9.4	5877.5	12^-	4810.5	10^-	E2&	DCO=1.04 2
1084 1	3.1	2946.5	5^-	1861.9	6^+	D	DCO=0.55 4
1095 1	1.3	5797.5	11^+	4702.3	9^+	Q#	DCO=2.58 16
1112 1	3.9	2846.6	4^+	1734.7	3^+	D+Q#	DCO=1.68 7
1112 1	3.9	6220.1	12^-	5108.1	10^-	Q	DCO=1.00 4
1131 1	0.4	2097.0+x	(15^+)	966.0+x	(13^+)	Q	DCO=0.96 11
1133 1	3.5	5569.6	12^+	4436.6	10^+	Q	DCO=1.06 8
1150 1	1.2	6392.1	12^+	5242.4	10^+	Q#	DCO=2.37 20
1153 1	3.6	6684.5	13^-	5531.5	11^-	Q	DCO=1.09 6
1165 1	0.8	7556.2	14^+	6392.1	12^+	Q#	DCO=1.68 35
1171 1	9.5	6226.4	13^-	5055.3	11^-	Q	DCO=0.99 2
1189 1	36	4071.5	10^+	2882.5	8^+	E2&	DCO=1.100 18 E_γ: 1189.2 (2005Go43).
1189 1	2.4	7873.5	15^-	6684.5	13^-	Q	DCO=1.19 8
1192 1	1.0	8802	(16^+)	7609.5	(14^+)	Q	DCO=1.12 7
1209 1	4.4	5592.0	11^+	4383.0	9^+	Q	DCO=0.96 5
1217 1	2.1	7437.1	14^-	6220.1	12^-	Q	DCO=0.95 5
1222 1	2.6	1222.3	2^+	0.0	0^+	Q	DCO=1.07 18
1235 1	0.2	7034.3	13^+	5797.5	11^+	Q#	DCO=2.41 32
1236 1	0.8	3097.8	5^+	1861.9	6^+	D+Q#	DCO=1.8 3
1237 1	7.5	7114.5	14^-	5877.5	12^-	Q	DCO=1.03 3

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$^{40}Ca(^{40}Ca,4p\gamma)$ 2005Va09 (continued)

$\gamma(^{76}Kr)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
1257 *1*	0.3	6608.5	(12+)	5351.5	12+	D[@]	DCO=1.17 *11*
1275 *1*	0.3	8831.2	16+	7556.2	14+	Q[#]	DCO=2.51 *65*
1280 *1*	25	5351.5	12+	4071.5	10+		
1282 *1*	1.2	8719	16−	7437.1	14−	Q	DCO=1.09 *10*
1293 *1*	1.8	3390.0+x	(17+)	2097.0+x	(15+)	Q	DCO=0.90 *11*
1302 *1*	17	6653.5	14+	5351.5	12+	Q	DCO=1.06 *2*
1310 *1*	7.7	1734.7	3+	424.7	2+	D+Q	DCO=0.71 *6*
1341 *1*	1.3	10143	(18+)	8802	(16+)	Q	DCO=0.95 *8*
1347 *1*	1.5	9221	17−	7873.5	15−	Q	DCO=0.96 *11*
1348 *1*	2.8	6940.0	13+	5592.0	11+	Q	DCO=0.95 *6*
1350 *1*	13	8003.5	16+	6653.5	14+	Q	DCO=1.00 *3*
1361 *1*	8.4	7587.4	15−	6226.4	13−	Q	DCO=1.05 *3*
1363 *1*	0.2	3097.8	5+	1734.7	3+		
1400 *1*	8.8	9404	18+	8003.5	16+	E2[&]	DCO=0.99 *4*
1411 *1*	6.7	8525.5	16−	7114.5	14−	E2[&]	DCO=1.12 *4*
1418 *1*	7.8	2454.6	5+	1036.0	4+	D+Q	DCO=0.86 *7*
1418 *1*	1.2	10137	18−	8719	16−	Q	DCO=0.95 *7*
1429 *1*	10.0	3291.4	7−	1861.9	6+	D	DCO=0.57 *1*
1436 *1*	1.8	3298.1	6−	1861.9	6+	D[@]	DCO=0.95 *7*
1457 *1*	1.2	4847.0+x	(19+)	3390.0+x	(17+)	Q	DCO=0.83 *12*
1468 *1*	1.3	7037.6	14+	5569.6	12+	Q	DCO=1.11 *18*
1474 *1*	2.3	3335.5	7+	1861.9	6+	D+Q	DCO=0.98 *10*
1495 *1*	2.0	8435.1	15+	6940.0	13+	Q	DCO=1.06 *10*
1501 *1*	1.5	4383.0	9+	2882.5	8+		
1523 *1*	3.4	10644	19−	9121	17−	E2[&]	DCO=1.03 *4*
1525 *1*	1.2	11668	(20+)	10143	(18+)	Q	DCO=1.06 *11*
1534 *1*	5.6	9121	17−	7587.4	15−	E2[&]	DCO=1.07 *4*
1536 *1*	6.3	10940	20+	9404	18+	E2[&]	DCO=1.10 *4*
1538 *1*	5.3	10064	18−	8525.5	16−	E2[&]	DCO=1.07 *4*
1554 *1*	4.6	4436.6	10+	2882.5	8+		
1556 *1*	0.6	10777	(19−)	9221	17−	(Q)	DCO=0.80 *22*
1584 *1*	1.0	11721	20−	10137	18−	Q	DCO=0.86 *5*
1587 *1*	5.0	2623.4	4−	1036.0	4+	D[@]	DCO=0.79 *9*
1596 *1*	2.4	11660	20−	10064	18−	E2[&]	DCO=1.22 *9*
1614 *1*	3.4	12258	21−	10644	19−	E2[&]	DCO=0.99 *4*
1618 *1*	0.6	10053.1	17+	8435.1	15+	Q	DCO=0.87 *12*
1625 *1*	1.2	6472.1+x	(21+)	4847.0+x	(19+)	Q	DCO=1.46 *31*
1632 *1*	1.5	8669.6	16+	7037.6	14+	Q	DCO=0.87 *18*
1650 *1*	15.0	2685.7	5−	1036.0	4+	D	DCO=0.55 *2*
1697 *1*	1.9	13357	22−	11660	20−	E2[&]	DCO=1.12 *9*
1712 *1*	4.0	3573.7	8+	1861.9	6+	Q	DCO=1.05 *9*
1719 *1*	0.6	12496	(21−)	10777	(19−)		
1723 *1*	0.8	13391	(22+)	11668	(20+)	Q	DCO=0.99 *9*
1735 *1*	0.3	11788	(19+)	10053.1	17+		
1759 *1*	4.3	12699	22+	10940	20+	E2[&]	DCO=1.13 *7*
1772 *1*	2.5	14030	23−	12258	21−	E2[&]	DCO=1.07 *7*
1781 *1*	0.5	13502	(22−)	11721	20−		
1804 *1*	0.3	2228.5	2−	424.7	2+	D[@]	DCO=0.51 *13*
1804 *1*	1.9	10473.7	(18+)	8669.6	16+		
1811 *1*	0.3	2846.6	4+	1036.0	4+	D[#@]	DCO=2.14 *54*
1828 *1*	0.2	13616	(21+)	11788	(19+)		
1835 *1*	2.7	2259.7	3−	424.7	2+	D	DCO=0.79 *10*

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^{40}Ca(^{40}Ca,4pγ) 2005Va09 (continued)

γ(^{76}Kr) (continued)

E_γ †	I_γ †	E_i(level)	J^π_i	E_f	J^π_f	Mult. ‡	Comments
1837 *1*	0.8	8309.1+x	(23$^+$)	6472.1+x	(21$^+$)	Q	DCO=1.11 *20*
1873 *1*	1.3	15230	24$^-$	13357	22$^-$	E2&	DCO=0.97 *9*
1927 *1*	0.3	12401	(20$^+$)	10473.7	(18$^+$)		
1947 *1*	0.5	14443	(23$^-$)	12496	(21$^-$)		
1958 *1*	0.8	15349	(24$^+$)	13391	(22$^+$)	Q	DCO=1.23 *16*
1983 *1*	1.8	16013	25$^-$	14030	23$^-$	E2&	DCO=1.05 *9*
2003 *1*	0.4	15505	(24$^-$)	13502	(22$^-$)		
2055 *1*	2.6	14754	24$^+$	12699	22$^+$		DCO=1.09 *8*
2062 *1*	1.0	3097.8	5$^+$	1036.0	4$^+$	D#	DCO=1.51 *22*
2073 *1*	0.5	10382+x	(25$^+$)	8309.1+x	(23$^+$)	Q	DCO=1.08 *27*
2102 *1*	0.9	17332	26$^-$	15230	24$^-$	E2&	DCO=1.12 *16*
2204 *1*	0.4	17553	(26$^+$)	15349	(24$^+$)	Q	DCO=1.15 *26*
2210 *1*	0.4	16653	(25$^-$)	14443	(23$^-$)		
2247 *1*	1.2	18260	27$^-$	16013	25$^-$	E2&	DCO=1.26 *16*
2314 *1*	0.3	12696+x	(27$^+$)	10382+x	(25$^+$)		
2356 *1*	0.2	17861	(26$^-$)	15505	(24$^-$)		
2406 *1*	1.2	17160	26$^+$	14754	24$^+$	E2&	DCO=1.11 *13*
2414 *1*	0.5	19746	28$^-$	17332	26$^-$	E2&	DCO=1.04 *19*
2495 *1*	0.2	20048	(28$^+$)	17553	(26$^+$)		
2522 *1*	0.2	19175	(27$^-$)	16653	(25$^-$)		
2538 *1*	0.1	15234+x	(29$^+$)	12696+x	(27$^+$)		
2558 *1*	0.6	20819	29$^-$	18260	27$^-$	E2&	DCO=1.09 *21*
2678 *1*	0.1	20539	(28$^-$)	17861	(26$^-$)		
2745 *1*	0.1	22793	(30$^+$)	20048	(28$^+$)		
2793 *1*	0.5	19953	28$^+$	17160	26$^+$	E2&	DCO=1.06 *28*
2842 *1*	0.2	22588	(30$^-$)	19746	28$^-$		
2927 *1*	0.2	23746	(31$^-$)	20819	29$^-$		
3207 *1*	0.1	23160	(30$^+$)	19953	28$^+$		
3285 *1*	0.1	25873	(32$^-$)	22588	(30$^-$)		
3341 *1*	0.1	27087	(33$^-$)	23746	(31$^-$)		

† From 2005Va09.
‡ From $\gamma\gamma$(DCO) in 2005Va09.
# DCO value for gate on ΔJ=1, dipole transition.
@ ΔJ=0 transition.
& DCO ratio gives ΔJ=2, quadrupole, E2 assigned from RUL based experimental transition quadrupole moments given by 2005Va09 from measured level lifetimes (see for example Fig. 5 in 2005Va09). Transition quadrupole moments are listed here in comments for levels.

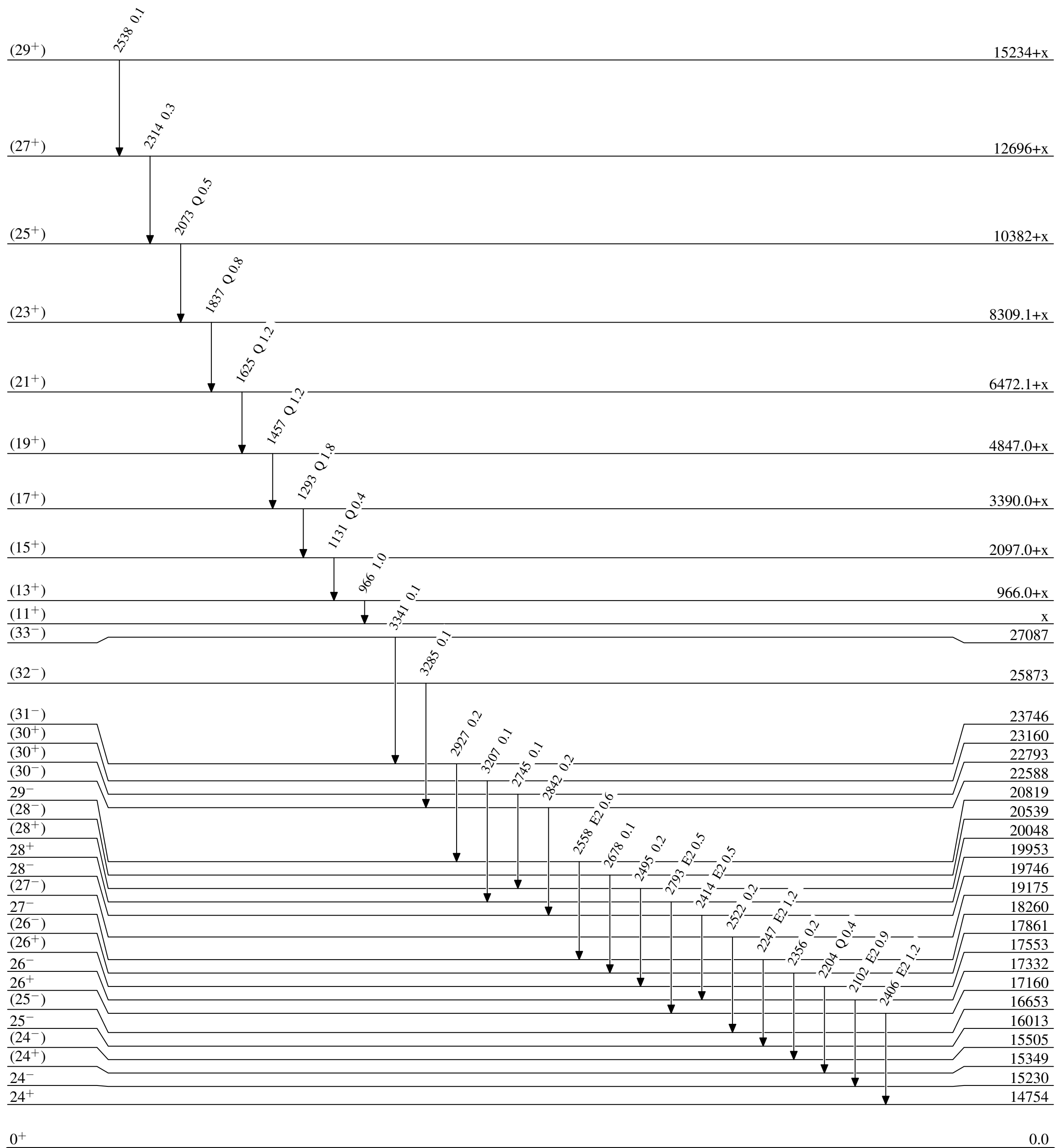
^{40}Ca(^{40}Ca,4pγ) 2005Va09

Level Scheme

Intensities: Relative I_γ

Legend

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

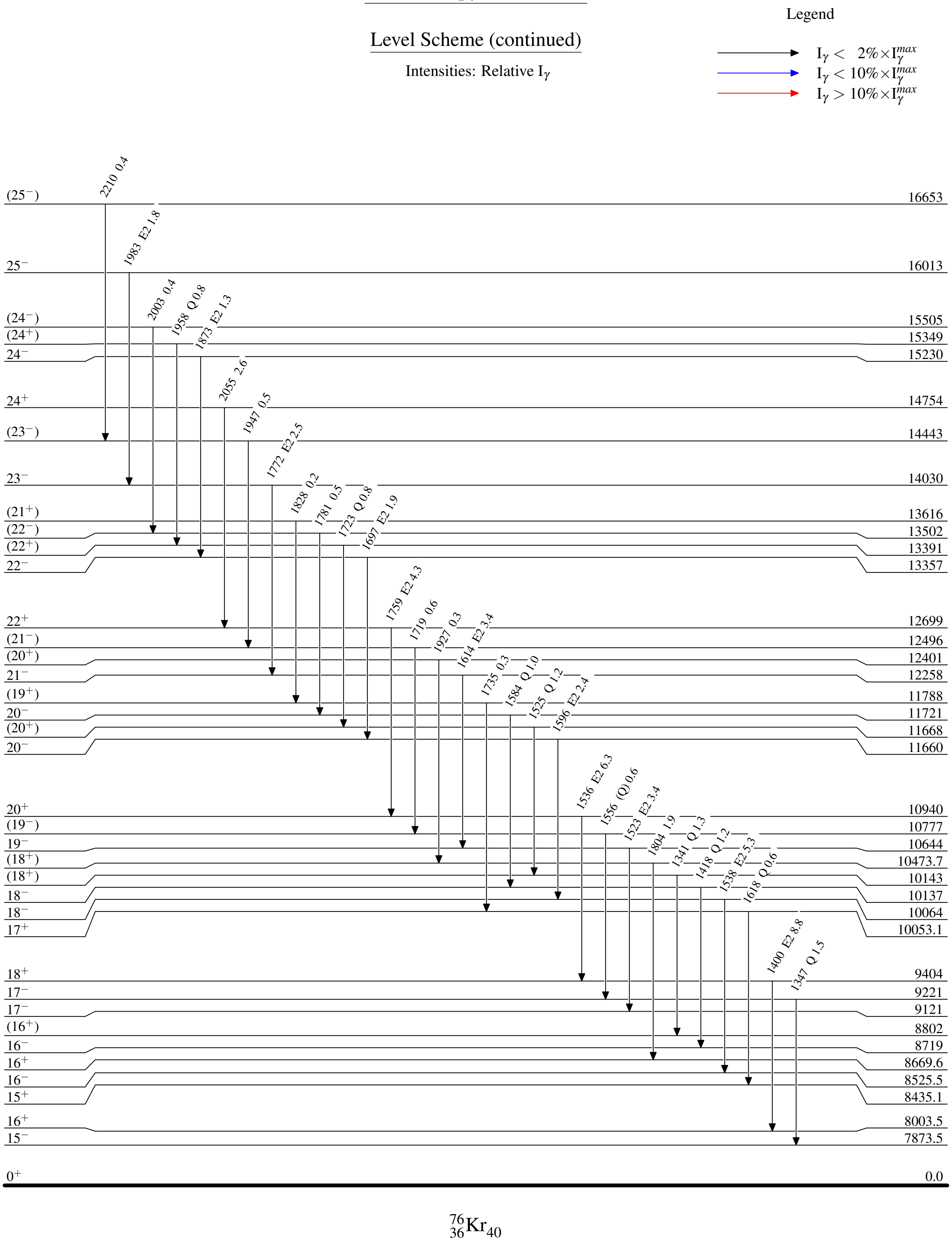


$^{76}_{36}$Kr$_{40}$

$^{40}Ca(^{40}Ca,4p\gamma)$ 2005Va09

Level Scheme (continued)

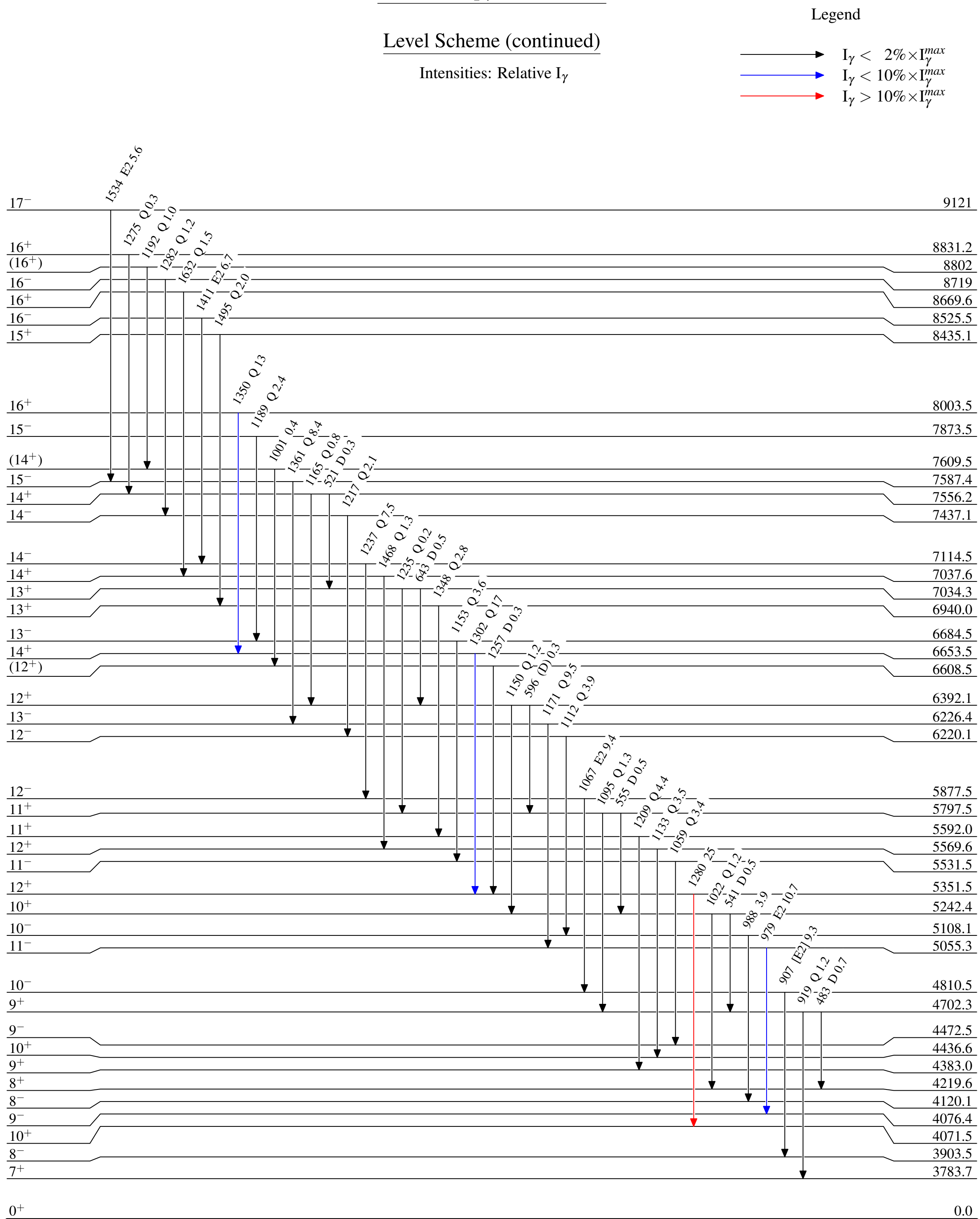
Intensities: Relative I_γ



$^{40}Ca(^{40}Ca,4p\gamma)$ 2005Va09

Level Scheme (continued)

Intensities: Relative I_γ

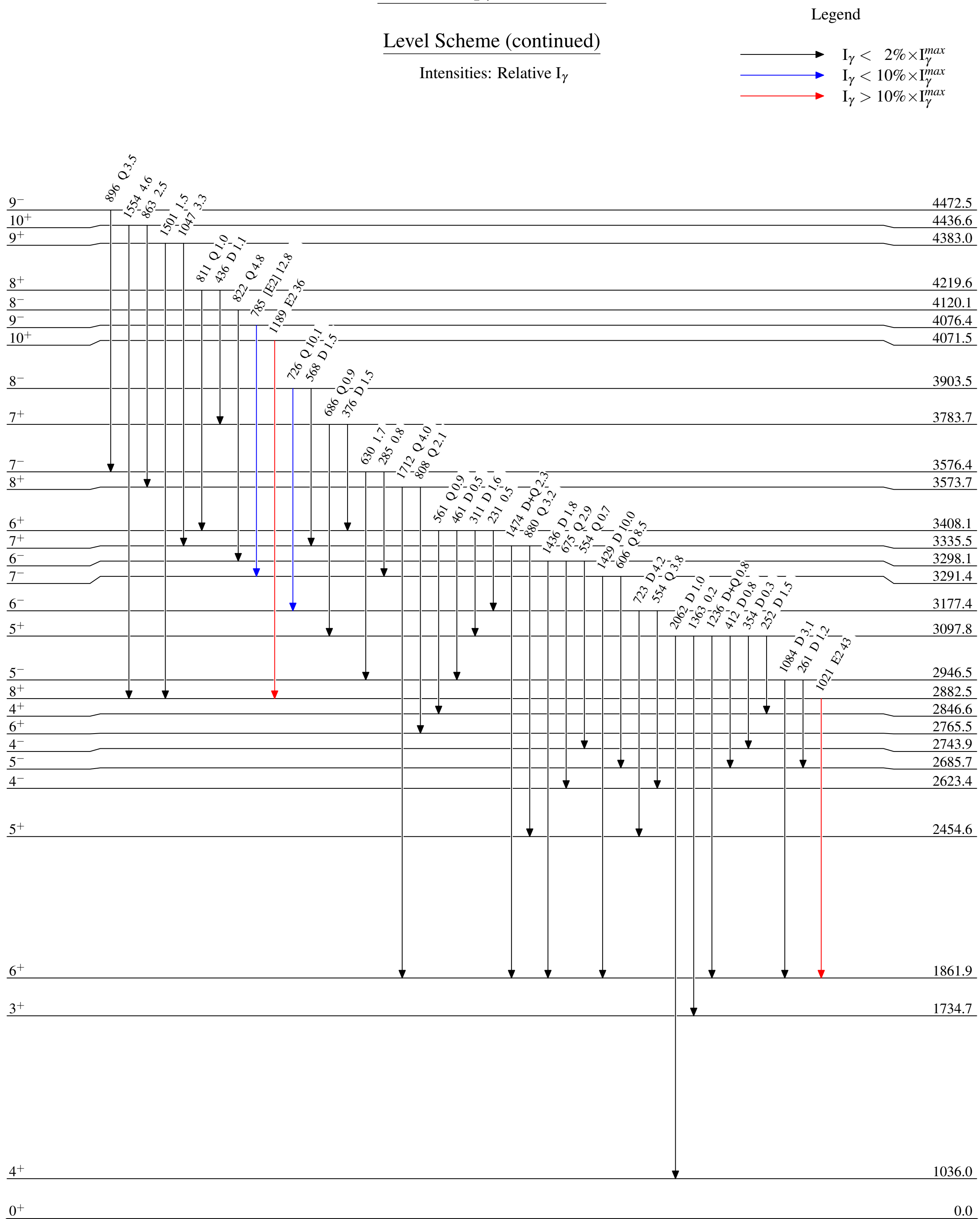


$^{76}_{36}Kr_{40}$

^{40}Ca(^{40}Ca,4pγ) 2005Va09

Level Scheme (continued)

Intensities: Relative I_γ

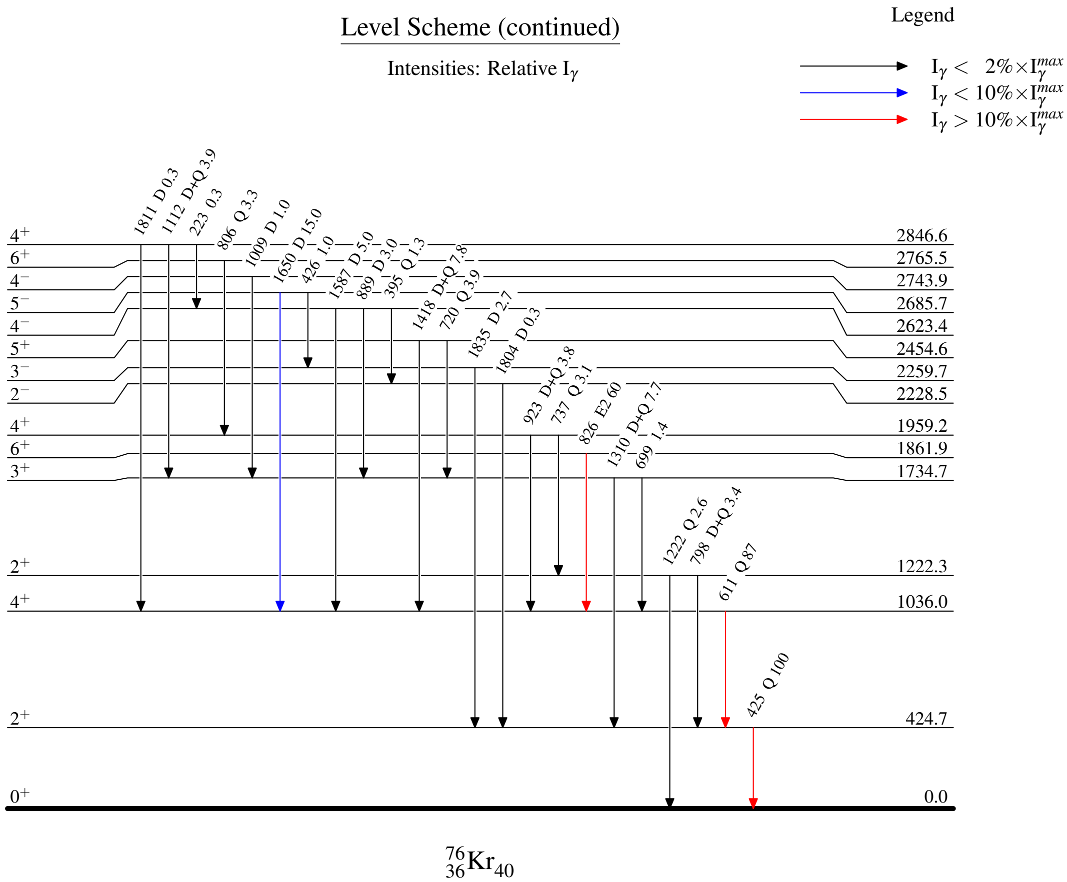


$^{76}_{36}Kr_{40}$

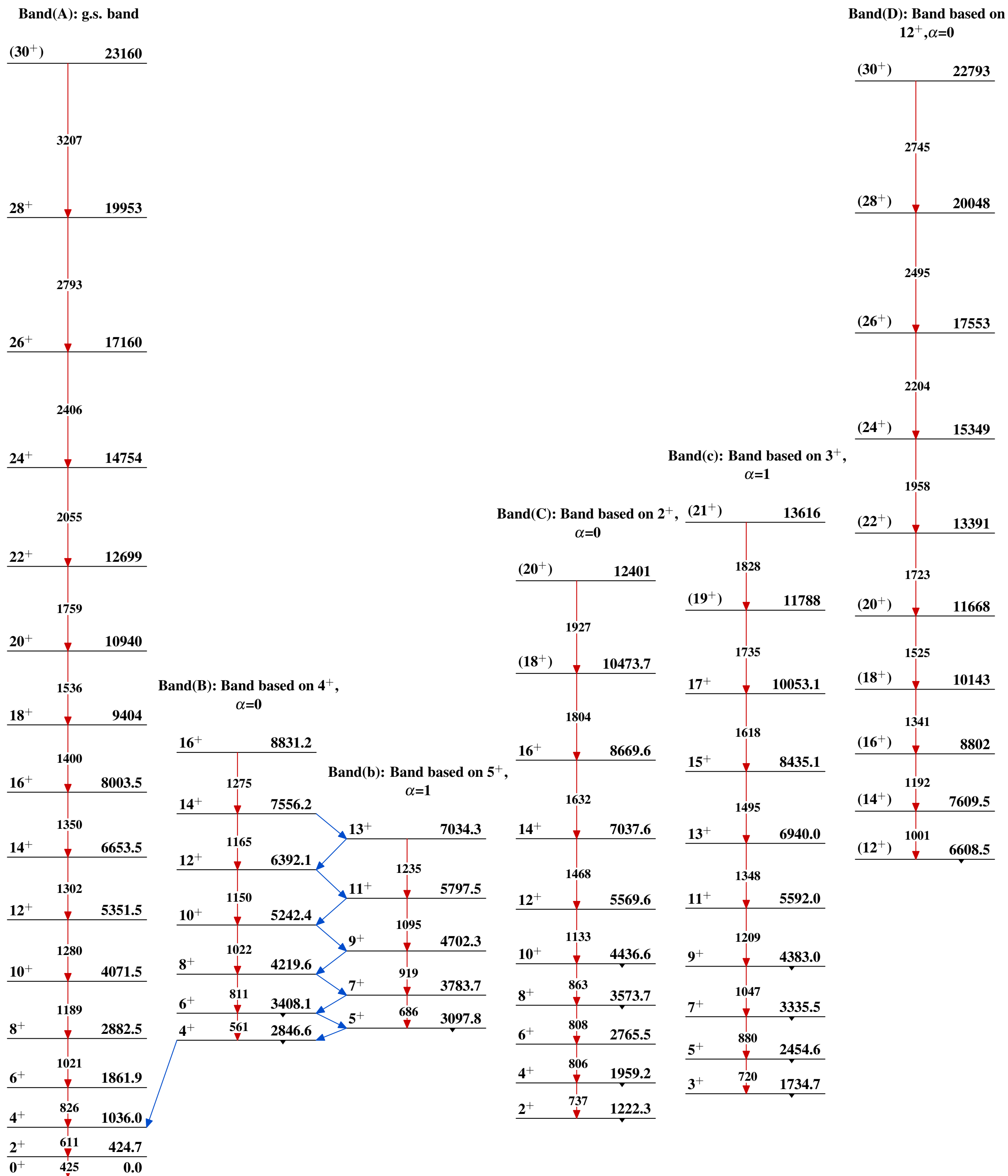
$^{40}Ca(^{40}Ca,4p\gamma)$ 2005Va09

Level Scheme (continued)

Intensities: Relative I_γ

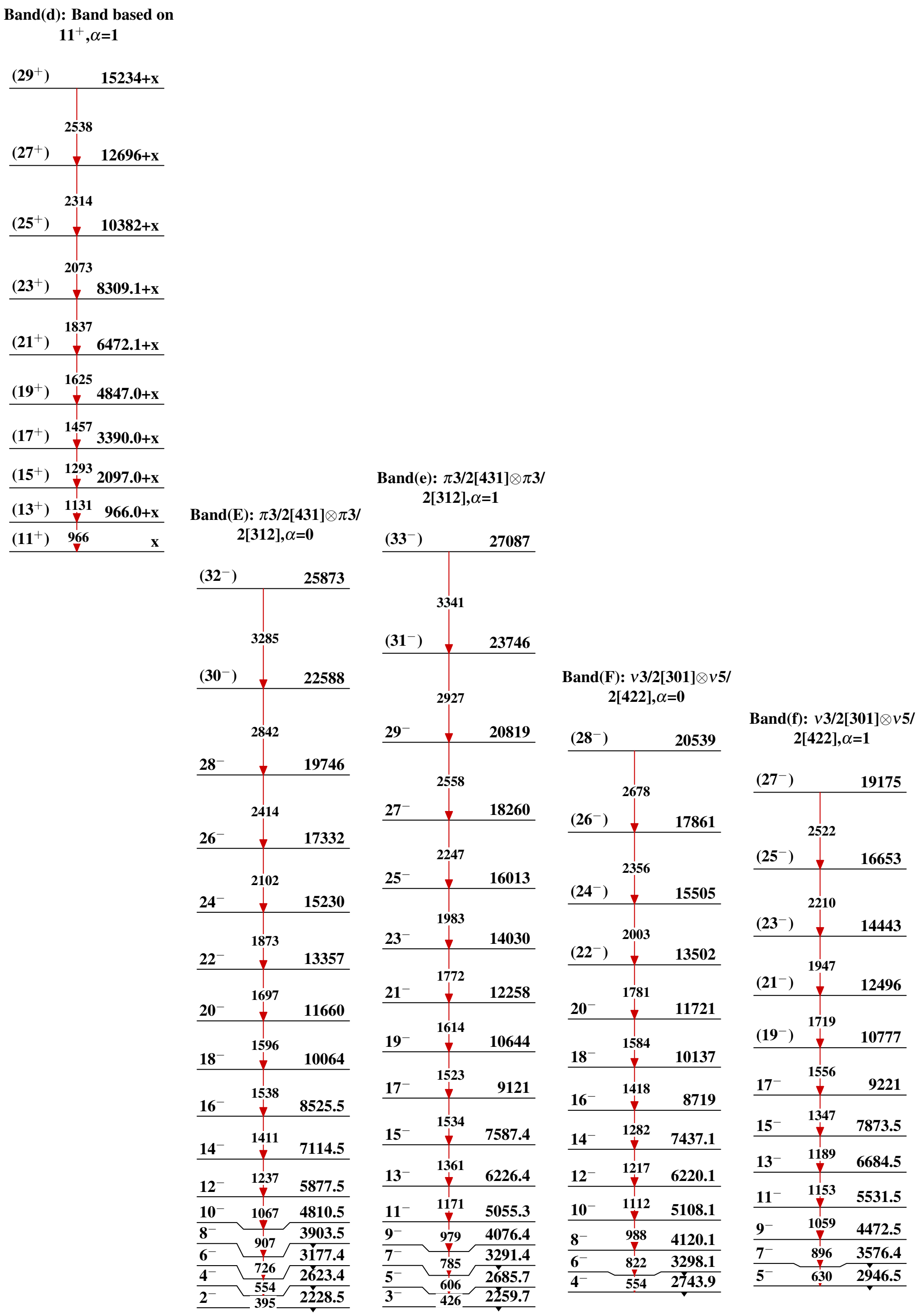


$^{40}Ca(^{40}Ca,4p\gamma)$ 2005Va09



$^{76}_{36}Kr_{40}$

^{40}Ca(^{40}Ca,4pγ) 2005Va09 (continued)



$^{76}_{36}Kr_{40}$