

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	S. -c. Wu	NDS 91,1 (2000)	15-Jul-2000

$Q(\beta^-) = -7601.20$; $S(n) = 13265.8$; $S(p) = 5354.59$; $Q(\alpha) = -7378.44$ [2012Wa38](#)

Note: Current evaluation has used the following Q record \$ -7603.20 13271.17 5356.013

[1995Au04](#).

See (p,n) for possible $J^\pi = 0^-$ isomer in weak neutral current investigation.

 ^{46}V LevelsCross Reference (XREF) Flags

A	^{46}V IT decay	E	$^{40}\text{Ca}(^9\text{Be}, p2n\gamma)$ E=20-45 MeV
B	^{46}Cr β^+ decay	F	$^{46}\text{Ti}(p, n)$ E=14.5 MeV
C	$^{28}\text{Si}(^{24}\text{Mg}, \alpha p n \gamma)$	G	$^{46}\text{Ti}(p, n \gamma)$
D	$^{32}\text{S}(^{16}\text{O}, n p \gamma)$ E=22-33 MeV	H	$^{46}\text{Ti}(^3\text{He}, t)$

E(level) [†]	J^π [‡]	$T_{1/2}$ ^{&}	XREF	Comments
0.0 ^d	0 ⁺	422.50 ms <i>11</i>	ABCDEF ^{GH}	$\%E + \%\beta^+ = 100$ J^π : from log $ft = 3.484$, 0 ⁺ T=1 analog state. $T_{1/2}$: from decay of β^+ measured in scintillation detectors, all references; weighted average of 422.57 ms <i>13</i> (1997Ko65), 422.28 ms <i>23</i> (1977Ba01) and 422.47 ms <i>39</i> (1977Al11). Others: 423.4 ms <i>20</i> (1974Ha59), 425.3 ms <i>20</i> (1973Al02).
801.46 ^f <i>10</i>	3 ⁺	1.02 ms <i>7</i>	A CDEF ^{GH}	$\%IT = 100$ $\mu = 1.64$ <i>3</i> (1989Ra17 , 1982Si15). $T_{1/2}$: from ^{46}V IT decay. $\%IT = 100$.
914.93 ^d <i>10</i>	2 ⁺		C EFG ^H	
993.6 ^c <i>3</i>	1 ⁺		C FG ^H	
1179.6 ^g <i>4</i>	4 ⁺		C G	
1224.88 ^f <i>14</i>	5 ⁺	0.42 ns <i>14</i>	C EFG ^H	
1236.5 ^c <i>6</i>	(0 ⁻) [#]		C FG	
1254 ^h	(3 ⁻) [@]		C GH	
1262.6			GH	
1366.5 ^b <i>3</i>	2		C FG	
1376.1 ^e <i>4</i>	3 ⁺		C GH	
1431.8 <i>5</i>	(1,2) [@]		FG ^H	
1539.8 ^g <i>3</i>	6 ⁺		C E G	
1604.21 ^f <i>24</i>	7 ⁺	0.75 ns <i>12</i>	C EFG ^H	
1665.9 ^c <i>4</i>	3		C FG ^H	
1725.6 ^e <i>4</i>	5 ⁺		C FG ^H	
1795.8 ^h <i>12</i>			C G	
1833.9 <i>9</i>			G	
1956.0 ^b <i>4</i>	4 ⁻		C GH	
2054.8 ^d <i>4</i>	4 ⁺		C GH	
2062.5 <i>10</i>			FG ^H	
2299 ^a <i>15</i>			H	
2370.9 <i>6</i>	(3,4) [@]		G	
2388.0 ^c <i>5</i>	5 ⁻ [@]		C G	
2429.9 ^h <i>16</i>			C G	

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Adopted Levels, Gammas (continued) ^{46}V Levels (continued)

E(level) [†]	J ^π [‡]	XREF	E(level) [†]	J ^π [‡]	XREF	E(level) [†]	J ^π [‡]	XREF
2449 ^a 15	(1 ⁺ ,2 ⁺)	F H	3406.0 ^h 11	(6 ⁻) [#]	C	4932.4 ^c 11	9 ⁻ [#]	C
2564 ^a 15		H	3407.8 ^h 11	[#]	C	4946.1 ^h 8	(9 ⁻) [#]	C
2686 ^a 15		H	3522.0 ^c 9	7 ⁻ [#]	C	5282.4 ^b 7	10 ⁻ [#]	C
2756.9 8		GH	3615 ^a 15		H	6255.3 ^c 13	11 ⁻ [#]	C
2814.9 9		G	3641.4 ^e 7	7 ⁺ [#]	C	7104.7 ^f 11	13 ⁺ [#]	C
2833.9 8		G	3658 ^a 15		H	7165.5 ^b 10	12 ⁻ [#]	C
2867.6 12		GH	3731 ^a 15		H	7727.8 ^d 11	(11 ⁺) [#]	C
2877 ^a 15		H	3791 ^a 15		H	8199.4 ^c 15	13 ⁻ [#]	C
2923.6 ^b 5	6 ⁻ [#]	C G	3871 ^a 15		H	8268.2 ^d 13	(12 ⁺) [#]	C
2977 ^a 15		H	3881 ^a 15		H	8487.6 ^f 13	15 ⁺ [#]	C
3093.6 ^f 4	9 ⁺ [#]	C E H	≈4010		H	9811.5 ^b 15	14 ⁻ [#]	C
3110.7 7		G	4183.6 ^b 6	8 ⁻ [#]	C	10104.6 ^d 17	(14 ⁺) [#]	C
3145.3 7		GH	4224.8 ^h 7	(7 ⁻) [#]	C	10850.5 ^c 18	15 ⁻ [#]	C
3188.9 16		GH	≈4330		H	11756.7 17	(16 ⁺) [#]	C
3217 ^a 15		H	4476.0 ^h 7	(8 ⁻) [#]	C	11779.3 ^b 18	16 ⁻ [#]	C
3266 ^a 15		H	4566.1 ^f 8	11 ⁺ [#]	C	13630.6 ^c 21	17 ⁻ [#]	C
3315.1 ^g 6	8 ⁺ [#]	C	4844.3 ^d 11	(8 ⁺) [#]	C			
3365.7 ^d 8	6 ⁺ [#]	C H	4917.4 ^g 7	10 ⁺ [#]	C			

[†] From a least-squares fit to γ data, except as noted.[‡] From $\gamma\gamma(\theta)$ of (p,n γ) (1999Fr14) and γ -angular distribution and DCO ratios ($^{24}\text{Mg},\alpha\text{pn}\gamma$) (1999Le30), except as noted.[#] From ($^{24}\text{Mg},\alpha\text{pn}\gamma$) (1999Le30).[@] From $\gamma\gamma(\theta)$ of (p,n γ) (1999Fr14).[&] From ($^9\text{Be},\text{p}2\text{n}\gamma$) (1981Po07), except as noted.^a Value reported in ($^3\text{He},\text{t}$) reduced by 0.987, see ($^3\text{He},\text{t}$).^b Band(A): band built on 1366 (2⁻) level.^c Band(B): band built on 994 (1⁻) level.^d Band(C): T=1 g.s. band.^e Band(D): T=0 band built on 1376 (3⁺) level.^f Band(E): T=0 band built on K $^\pi$ =3⁺ isomeric state.^g Band(F): T=0 band built on 1179 (4⁺) level.^h Band(G): band built on 1254 level, not observed In 1999Ol01. $\gamma(^{46}\text{V})$

E _i (level)	J _i ^π	E _γ [†]	I _γ [‡]	E _f	J _f ^π	Mult.	δ [‡]	Comments
801.46	3 ⁺	801.5 1	100	0.0	0 ⁺	[M3]		B(M3)(W.u.)=1.9 Mult.: from J ^π ;
914.93	2 ⁺	114 [@]	≥0.2	801.46	3 ⁺			
		914.9 1	100 15	0.0	0 ⁺	E2		
993.6	1 ⁺	993.4 4		0.0	0 ⁺			
1179.6	4 ⁺	377.6 4	100	801.46	3 ⁺	M1+E2	6 +3-2	Mult.: E2 from ($^{24}\text{Mg},\alpha\text{pn}\gamma$).
1224.88	5 ⁺	423.5 1	100	801.46	3 ⁺	[E2]		B(E2)(W.u.)=10 4
1236.5	(0 ⁻)	242.5 7		993.6	1 ⁺			
1254	(3 ⁻)	339.0 7		914.93	2 ⁺			
		452.5 7		801.46	3 ⁺			
1262.6		348.4		914.93	2 ⁺			
		461.2		801.46	3 ⁺			

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Adopted Levels, Gammas (continued)

$\gamma(^{46}\text{V})$ (continued)								
$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult.	$\delta^\ddagger$	Comments
1366.5	2	129.5 7	1.0 2	1236.5	(0 ⁻)			
		372.7 4	100 15	993.6	1 ⁺	(E2)		
		451.9 4	32 5	914.93	2 ⁺			
		1366.0 6	38 6	0.0	0 ⁺			
1376.1	3 ⁺	383	1.6 4	993.6	1 ⁺	E2		
		460.7 6	100 15	914.93	2 ⁺	M1+E2	0.02 3	Mult.: M1 from ($^{24}\text{Mg}, \alpha p n \gamma$).
1431.8	(1,2)	1431.8 @ 5	100	0.0	0 ⁺			
1539.8	6 ⁺	315.4 3	100 16	1224.88	5 ⁺	M1+E2	1.9 +4-3	Mult.: E2 from ($^{24}\text{Mg}, \alpha p n \gamma$).
		359.0 6	72 12	1179.6	4 ⁺	E2		
1604.21	7 ⁺	379.3 2		1224.88	5 ⁺	[E2]		B(E2)(W.u.)=10 2.
1665.9	3	750.7 4	100	914.93	2 ⁺	M1+E2	-0.01 4	
1725.6	5 ⁺	186	3 1	1539.8	6 ⁺			
		349.0 6	100 15	1376.1	3 ⁺	E2		
		500.5 7	20 3	1224.88	5 ⁺	M1+E2	0.9 +3-2	Mult.: E2 from ($^{24}\text{Mg}, \alpha p n \gamma$).
		546	8 2	1179.6	4 ⁺			
1795.8		540.5 7		1254	(3 ⁻)			
1833.9		919 @		914.93	2 ⁺			
1956.0	4 ⁻	230		1725.6	5 ⁺			
		579.7 6		1376.1	3 ⁺			
		589.3 6		1366.5	2			
		732		1224.88	5 ⁺			
2054.8	4 ⁺	329 @	9 3	1725.6	5 ⁺			
		679.0 4	100 17	1376.1	3 ⁺	M1+E2	0.08 4	Mult.: M1 from ($^{24}\text{Mg}, \alpha p n \gamma$); I_γ ; 100 20.
		830 @	10 4	1224.88	5 ⁺	M1+E2	0.02 6	
		1139 @	14 3	914.93	2 ⁺	E2		
2062.5		1261 @ 1	100	801.46	3 ⁺			
2370.9	(3,4)	575 @		1795.8				
		1004 @		1366.5	2			
		1146.4 @ 9		1224.88	5 ⁺			
		1191 @		1179.6	4 ⁺			
2388.0	5 ⁻	333.3 6		2054.8	4 ⁺			
		721.6 6		1665.9	3			
		849		1539.8	6 ⁺			
2429.9		634		1795.8				
		1174.5 7		1254	(3 ⁻)			
2756.9		1217		1539.8	6 ⁺			
		1532		1224.88	5 ⁺			
2814.9		760 @		2054.8	4 ⁺			
		981 @		1833.9				
2833.9		463 @		2370.9	(3,4)			
		1609 @		1224.88	5 ⁺			
2867.6		1631 @		1236.5	(0 ⁻)			
2923.6	6 ⁻	967.4 6		1956.0	4 ⁻			
		1198		1725.6	5 ⁺			
		1384		1539.8	6 ⁺			
		1698		1224.88	5 ⁺			
3093.6	9 ⁺	1489.1 # 3		1604.21	7 ⁺			
3110.7		1570.8 @ 9		1539.8	6 ⁺			
		1886 @		1224.88	5 ⁺			
3145.3		1478.9 9		1665.9	3			

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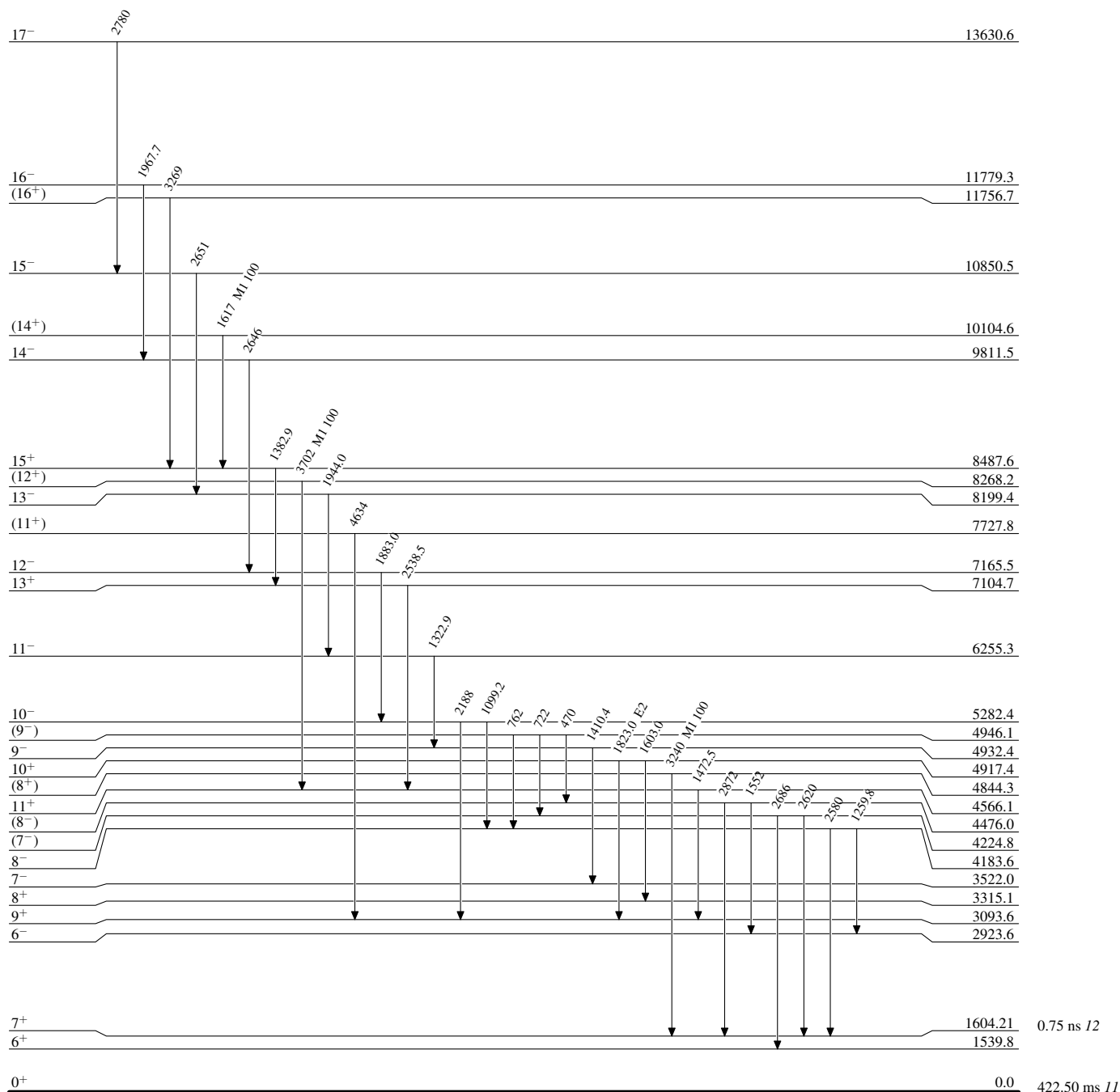
Adopted Levels, Gammas (continued) $\gamma(^{46}\text{V})$ (continued)

$E_i(\text{level})$	J_i^π	$E_\gamma^\dagger$	$I_\gamma^\ddagger$	E_f	J_f^π	Mult.
3145.3		1921		1224.88	5^+	
3188.9		1393 [@]		1795.8		
3315.1	8^+	1712 [#]		1604.21	7^+	
		1775.5 [#] 7		1539.8	6^+	
3365.7	6^+	1640.0 [#] 7	100 [#] 40	1725.6	5^+	M1 [#]
3406.0	(6^-)	1450 [#]		1956.0	4^-	
3407.8		1868 [#]		1539.8	6^+	
3522.0	7^-	1134.0 [#] 7		2388.0	5^-	
3641.4	7^+	1915.0 [#] 7		1725.6	5^+	
		2418 [#]		1224.88	5^+	E2 [#]
4183.6	8^-	1259.8 [#] 7		2923.6	6^-	
		2580 [#]		1604.21	7^+	
4224.8	(7^-)	2620 [#]		1604.21	7^+	
		2686 [#]		1539.8	6^+	
4476.0	(8^-)	1552 [#]		2923.6	6^-	
		2872 [#]		1604.21	7^+	
4566.1	11^+	1472.5 [#] 7		3093.6	9^+	
4844.3	(8^+)	3240 [#]	100 [#] 45	1604.21	7^+	M1 [#]
4917.4	10^+	1603.0 [#] 7		3315.1	8^+	
		1823.0 [#] 7		3093.6	9^+	E2 [#]
4932.4	9^-	1410.4 [#] 7		3522.0	7^-	
4946.1	(9^-)	470 [#]		4476.0	(8^-)	
		722 [#]		4224.8	(7^-)	
		762 [#]		4183.6	8^-	
5282.4	10^-	1099.2 [#] 7		4183.6	8^-	
		2188 [#]		3093.6	9^+	
6255.3	11^-	1322.9 [#] 7		4932.4	9^-	
7104.7	13^+	2538.5 [#] 7		4566.1	11^+	
7165.5	12^-	1883.0 [#] 7		5282.4	10^-	
7727.8	(11^+)	4634 [#]		3093.6	9^+	
8199.4	13^-	1944.0 [#] 7		6255.3	11^-	
8268.2	(12^+)	3702 [#]	100 [#] 30	4566.1	11^+	M1 [#]
8487.6	15^+	1382.9 [#] 7		7104.7	13^+	
9811.5	14^-	2646 [#]		7165.5	12^-	
10104.6	(14^+)	1617 [#]	100 [#] 30	8487.6	15^+	M1 [#]
10850.5	15^-	2651 [#]		8199.4	13^-	
11756.7	(16^+)	3269		8487.6	15^+	
11779.3	16^-	1967.7 [#]		9811.5	14^-	
13630.6	17^-	2780 [#]		10850.5	15^-	

[†] From weighted average of (p,n γ), (^9Be ,p2n γ) and (^{24}Mg , α p n γ), except as noted.[‡] From (p,n γ), except as noted.[#] From (^{24}Mg , α p n γ).[@] From (p,n γ).

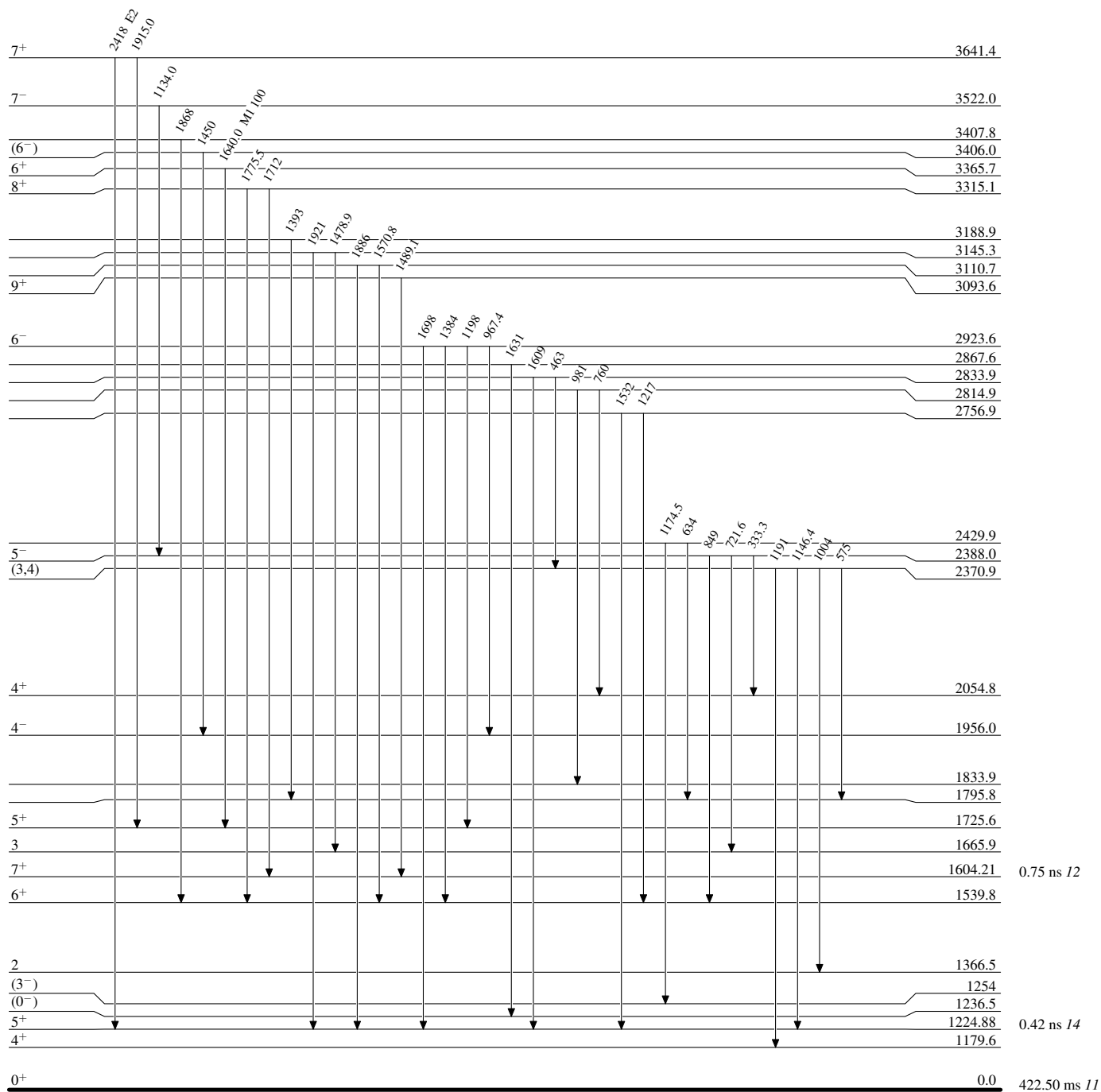
Adopted Levels, GammasLevel Scheme

Intensities: Relative photon branching from each level



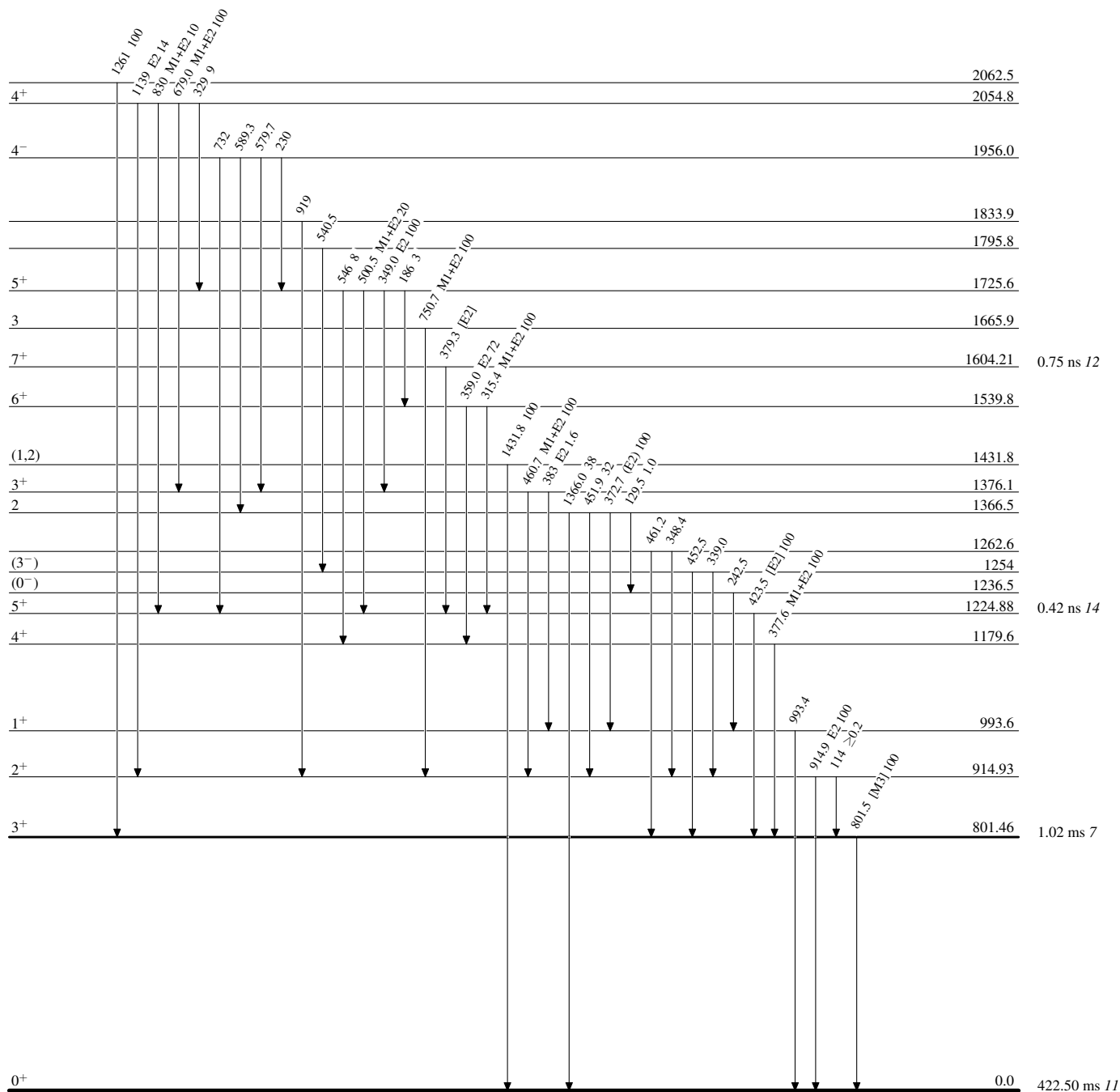
Adopted Levels, Gammas**Level Scheme (continued)**

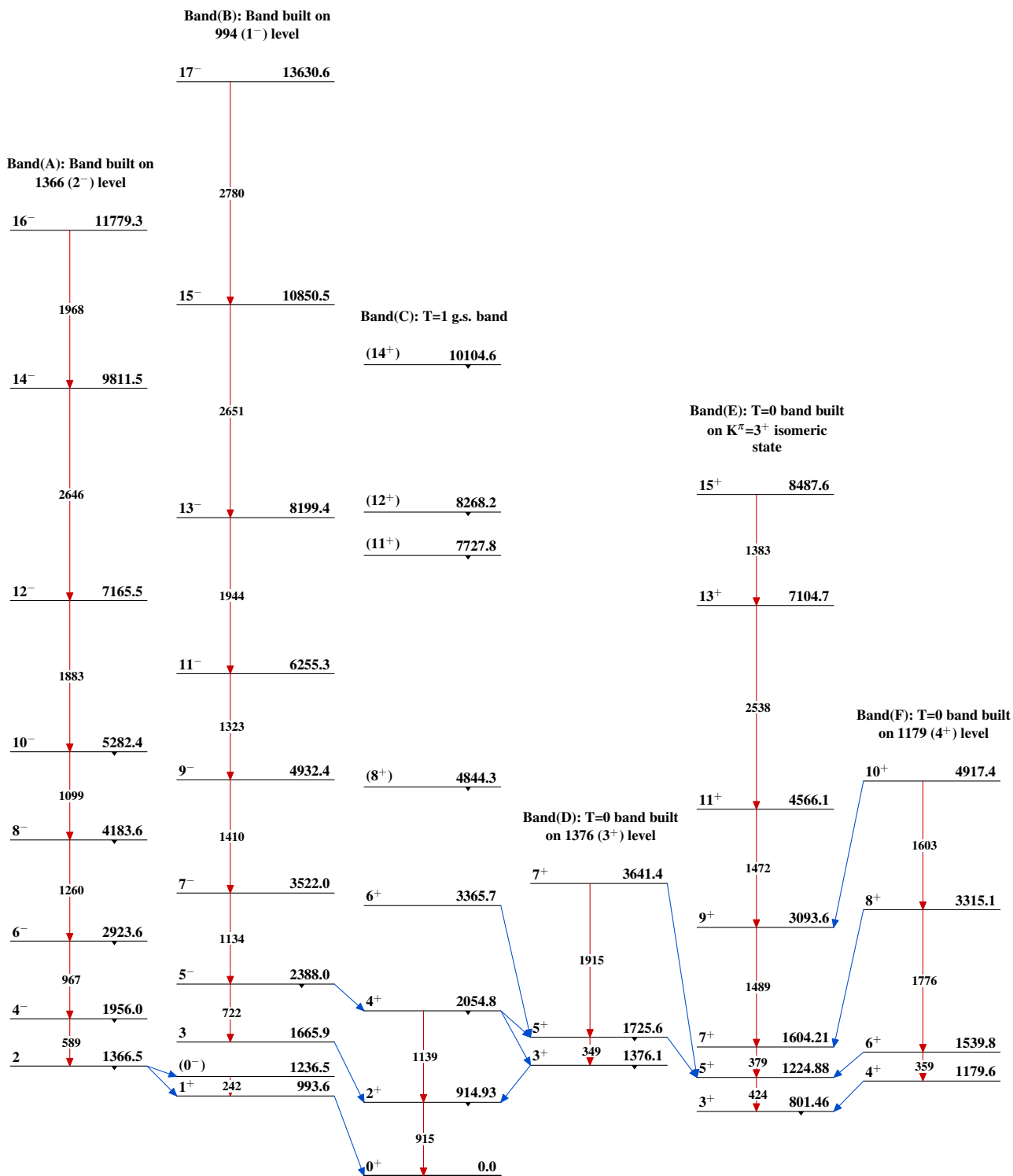
Intensities: Relative photon branching from each level



Adopted Levels, Gammas**Level Scheme (continued)**

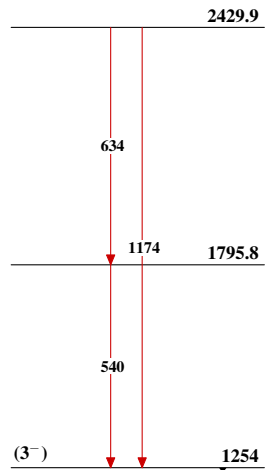
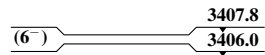
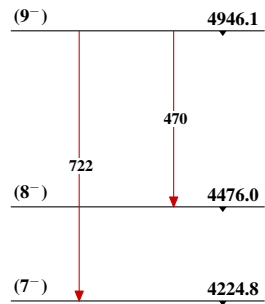
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Adopted Levels, Gammas (continued)

Band(G): Band built on 1254 level,
not observed In 1999OI01



$^{46}_{23}\text{V}_{23}$