^{252}Cf SF decay 2006Jo05,2005Zh36,2002Xu03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	D. De Frenne and A. Negret	NDS 109, 943 (2008)	1-May-2007

Parent: ^{252}Cf: E=0.0; $J^\pi=0^+$; $T_{1/2}$=2.645 y *8*; %SF decay=?
^{252}Cf-%SF decay=3.092 *8*.
Evaluation of data sets from 2006Jo05, 2005Zh36, 2002Xu03: Includes also: 2003Ha49, 2002Ha46, 2006Hw01, 2005Sm08, 2004Sm04, 2003Hu07, 1996Sm04 2006Hw01, 2005Sm08, 2004Sm04, 2003Hu07 and 1996Sm04.
Data are from 2006Jo05, 2005Zh36 and 2002Xu03, unless otherwise stated.

^{106}Mo Levels

E(level)‡	J^π†	$T_{1/2}$	Comments
0	0^+		
171.81# *20*	2^+	1.2 ns *1*	g=+0.21 *2* (2005Sm08,2004Sm04) g: Measured with the time-integral perturbed angular correlation technique. $T_{1/2}$: from γ(t) (2006Hw01).
522.60# *23*	4^+	25.4 ps *32*	$T_{1/2}$: from recoil-distance method (2003Hu07).
710.49@ *21*	2^+		
885.44@ *23*	3^+		
1033.48# *24*	6^+	4.2 ps *13*	$T_{1/2}$: from recoil-distance method (2003Hu07).
1068.00@ *23*	4^+		
1150.01c *22*	(2^+)		
1306.98@ *24*	5^+		
1434.95b *23*	4^+		
1536.71c *25*	(4^+)		
1563.38@ *25*	6^+		
1657.87b *25*	5^+		
1688.4# *3*	8^+	1.77 ps *24*	$T_{1/2}$: from line-shape analysis (1996Sm04).
1817.4& *3*	(3^-)		
1868.4@ *3*	7^+		
1910.49b *25*	6^+		
1936.98& *25*	(4^-)		
1952.4a *3*	(5^-)		J^π: (4^-) in 2002Ha46.
2015.0c *3*	(6^+)		
2090.57& *25*	(5^-)		
2142.8a *3*	(6^-)		J^π: (5^-) in 2002Ha46.
2147.0d *3*	(5^-)		
2194.5@ *3*	8^+		
2199.7b *3*	7^+		
2276.5& *3*	(6^-)		
2302.9e *3*	(5^+)		
2369.3a *3*	(7^-)		J^π: (6^-) in 2002Ha46.
2472.7# *4*	10^+	0.69 ps *9*	$T_{1/2}$: from line-shape analysis (1996Sm04).
2499.0& *3*	(7^-)		
2521.1b *4*	8^+		
2559.4@ *4*	9^+		
2565.9c *3*	(8^+)		
2566.2d *3*	(7^-)		
2629.6a *3*	(8^-)		J^π: (7^-) in 2002Ha46.

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^{252}Cf SF decay 2006Jo05,2005Zh36,2002Xu03 (continued)

^{106}Mo Levels (continued)

E(level)‡	Jπ†	$T_{1/2}$	Comments
2713.3[e] 3	(7+)		
2746.6[&] 3	(8−)		
2877.4[b] 4	9+		
2921.8[a] 4	(9−)		Jπ: (8−) in 2002Ha46.
2951.0[@] 4	10+		
3041.7[&] 4	(9−)		
3132.3[d] 4	(9−)		
3184.8[c] 4	(10+)		
3239.0[a] 4	(10−)		Jπ: (9−) in 2002Ha46.
3253.8[e] 4	(9+)		
3264.1[b] 5	10+		
3349.8[&] 4	(10−)		
3369.3[#] 5	12+	0.367 ps 35	$T_{1/2}$: from line-shape analysis for 889.9γ (1996Sm04). The evaluators assume that 889.9γ is the same as 896.6γ from 2002Xu03.
3370.9[@] 4	11+		
3592.3[a] 5	(11−)		Jπ: (10−) in 2002Ha46.
3682.1[b] 5	11+		
3707.7[&] 5	(11−)		
3812.0[@] 5	12+		
3843.7[d] 5	(11−)		
3928.6[e] 5	(11+)		
3945.9[a] 5	(12−)		
4049.4[&] 5	(12−)		
4132.7[b] 6	(12+)		
4292.5[@] 5	13+		
4361.0[#] 6	14+		
4372.2[a] 6	(13−)		
4752.7[a] 6	(14−)		E(level): from 2005Zh36 and 2006Jo05.
4757.9[@] 6	14+		
5425.2[#] 7	16+		

† From 2002Xu03, unless noted otherwise Based on well established data of g.s.-band, one-phonon and two-phonon gamma-vibrational bands and Nilsson model considerations. Values taken from 2002Xu03 because this paper has the most detailed discussion on the experimental data taken with Gammasphere.

‡ From least-squares fit to Eγ′s, assuming Δ(Eγ)=0.3 keV for each γ ray (by evaluators). The levels at 2496.7, (8+); 3196.5, (10+); 3642.9 and 4305.4 from 2002Ha46 have been omitted since these are not reported in other papers from the same group (2005Zh36,2003Ha49,2002Xu03).

[#] Band(A): g.s., Yrast Band.

[@] Band(B): γ-band.

[&] Band(C): ν(3/2[411])⊗ν(3/2[541])$^{-1}$. Possible 'chiral' partner of ν(5/2[413])⊗ν(5/2[532]) (2005Zh36).

[a] Band(D): ν(5/2[413])⊗ν(5/2[532]). Possible 'chiral' partner of ν(3/2[411])⊗ν(3/2[541])$^{-1}$ (2005Zh36).

[b] Band(E): γγ phonon band.

[c] Band(F): Band based on (2+).

[d] Band(G): π(7/2[413])⊗π(3/2[301]).

[e] Band(H): π(1/2[420])⊗π(9/2[404]).

^{252}Cf SF decay 2006Jo05,2005Zh36,2002Xu03 (continued)

$\gamma(^{106}Mo)$

E_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Comments
119.5	1936.98	(4$^-$)	1817.4	(3$^-$)	
137.2[‡]	2090.57	(5$^-$)	1952.4	(5$^-$)	
153.6	2090.57	(5$^-$)	1936.98	(4$^-$)	
171.8	171.81	2$^+$	0	0$^+$	
174.9	885.44	3$^+$	710.49	2$^+$	
182.6	1068.00	4$^+$	885.44	3$^+$	E_γ: 182.2 (2002Ha46).
185.9	2276.5	(6$^-$)	2090.57	(5$^-$)	
190.5	2142.8	(6$^-$)	1952.4	(5$^-$)	E_γ: 190.4 in (2002Ha46).
205.9[‡]	2142.8	(6$^-$)	1936.98	(4$^-$)	
222.5	2499.0	(7$^-$)	2276.5	(6$^-$)	
223.0	1657.87	5$^+$	1434.95	4$^+$	E_γ: 223.2 (2002Ha46).
226.6	2369.3	(7$^-$)	2142.8	(6$^-$)	
231.7	2142.8	(6$^-$)	1910.49	6$^+$	E_γ: 232.4 (2003Ha49), 232.6 (2002Ha46).
239.0	1306.98	5$^+$	1068.00	4$^+$	E_γ: 239.4 (2002Ha46).
247.9[‡]	2746.6	(8$^-$)	2499.0	(7$^-$)	
252.6	1910.49	6$^+$	1657.87	5$^+$	
256.4	1563.38	6$^+$	1306.98	5$^+$	E_γ: 256.0 (2002Ha46).
260.6	2629.6	(8$^-$)	2369.3	(7$^-$)	
273.1	2090.57	(5$^-$)	1817.4	(3$^-$)	
273.5	1306.98	5$^+$	1033.48	6$^+$	
289.3	2199.7	7$^+$	1910.49	6$^+$	E_γ: 289.5 (2002Ha46).
292.2	2921.8	(9$^-$)	2629.6	(8$^-$)	
294.5	1952.4	(5$^-$)	1657.87	5$^+$	
295.0[‡]	3041.7	(9$^-$)	2746.6	(8$^-$)	
305.5[‡]	1868.4	7$^+$	1563.38	6$^+$	
308[‡]	3349.8	(10$^-$)	3041.7	(9$^-$)	
317.2	3239.0	(10$^-$)	2921.8	(9$^-$)	
321.3	2521.1	8$^+$	2199.7	7$^+$	
326.1[‡]	2194.5	8$^+$	1868.4	7$^+$	
339.5	2276.5	(6$^-$)	1936.98	(4$^-$)	E_γ: 339.7 (2002Ha46).
350.8	522.60	4$^+$	171.81	2$^+$	E_γ: 350.7 (2002Ha46).
350.9	1657.87	5$^+$	1306.98	5$^+$	
353.5[‡]	3592.3	(11$^-$)	3239.0	(10$^-$)	
353.5[‡]	3945.9	(12$^-$)	3592.3	(11$^-$)	
357.5	1068.00	4$^+$	710.49	2$^+$	E_γ: 356.9 (2002Ha46).
358[‡]	3707.7	(11$^-$)	3349.8	(10$^-$)	
362.8	885.44	3$^+$	522.60	4$^+$	E_γ: 363.5 (2002Ha46).
366.9	1434.95	4$^+$	1068.00	4$^+$	
386.7	1536.71	(4$^+$)	1150.01	(2$^+$)	
408.4	2499.0	(7$^-$)	2090.57	(5$^-$)	
410.4	2713.3	(7$^+$)	2302.9	(5$^+$)	
416.7	2369.3	(7$^-$)	1952.4	(5$^-$)	E_γ: 417.1 (2003Ha49).
419.2	2566.2	(7$^-$)	2147.0	(5$^-$)	
421.6	1306.98	5$^+$	885.44	3$^+$	
430.3	2629.6	(8$^-$)	2199.7	7$^+$	E_γ: 429.7 (2002Ha46).
459.0	2369.3	(7$^-$)	1910.49	6$^+$	E_γ: 459.2 (2002Ha46).
470.1	2746.6	(8$^-$)	2276.5	(6$^-$)	E_γ: 470.3 (2002Ha46).
475.2	1910.49	6$^+$	1434.95	4$^+$	E_γ: 475.6 (2003Ha49).
478.3	2015.0	(6$^+$)	1536.71	(4$^+$)	E_γ: 477.3 (2002Ha46).
485.0	2142.8	(6$^-$)	1657.87	5$^+$	
486.2	2629.6	(8$^-$)	2142.8	(6$^-$)	E_γ: 487.2 (2003Ha49).
495.4	1563.38	6$^+$	1068.00	4$^+$	
506.1	2194.5	8$^+$	1688.4	8$^+$	E_γ: 508.9 (2002Ha46).

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^{252}Cf SF decay 2006Jo05,2005Zh36,2002Xu03 (continued)

γ(^{106}Mo) (continued)

E_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Comments
510.9	1033.48	6^+	522.60	4^+	
517.5	1952.4	(5^-)	1434.95	4^+	
529.9	1563.38	6^+	1033.48	6^+	E_γ: 529.8 (2002Ha46).
538.7	710.49	2^+	171.81	2^+	E_γ: 538.8 (2002Ha46).
540.5	3253.8	(9^+)	2713.3	(7^+)	
542.1	2199.7	7^+	1657.87	5^+	E_γ: 541.9 (2003Ha49).
542.7	3041.7	(9^-)	2499.0	(7^-)	
545.4	1068.00	4^+	522.60	4^+	
549.5	1434.95	4^+	885.44	3^+	E_γ: 549.6 (2002Ha46).
550.9	2565.9	(8^+)	2015.0	(6^+)	E_γ: 551.0 (2003Ha49,2002Ha46).
552.4	2921.8	(9^-)	2369.3	(7^-)	E_γ: 552.8 (2003Ha49).
561.4	1868.4	7^+	1306.98	5^+	
566.1	3132.3	(9^-)	2566.2	(7^-)	
[x]586.2[#]					
589.9	1657.87	5^+	1068.00	4^+	
[x]601.6[#]					
603.2	3349.8	(10^-)	2746.6	(8^-)	E_γ: 604.0 (2002Ha46).
603.5	1910.49	6^+	1306.98	5^+	E_γ: 603.0 (2002Ha46).
609.4	3239.0	(10^-)	2629.6	(8^-)	
610.6	2521.1	8^+	1910.49	6^+	
618.8	3184.8	(10^+)	2565.9	(8^+)	
631.1	2194.5	8^+	1563.38	6^+	
[x]631.5[#]					
636.4	2199.7	7^+	1563.38	6^+	E_γ: 637.0 (2002Ha46).
654.9	1688.4	8^+	1033.48	6^+	
[x]662.5[#]					
666.0	3707.7	(11^-)	3041.7	(9^-)	
670.5	3592.3	(11^-)	2921.8	(9^-)	
674.8	3928.6	(11^+)	3253.8	(9^+)	
677.7	2877.4	9^+	2199.7	7^+	
691.0	2559.4	9^+	1868.4	7^+	
699.6[‡]	4049.4	(12^-)	3349.8	(10^-)	
706.9	3945.9	(12^-)	3239.0	(10^-)	
710.5	710.49	2^+	0	0^+	E_γ: 654.9 (2002Ha46) is incorrect since it does not match transition to g.s. as shown by 2002Ha46.
711.4	3843.7	(11^-)	3132.3	(9^-)	
713.1	2276.5	(6^-)	1563.38	6^+	E_γ: 713.2 (2002Ha46).
713.6	885.44	3^+	171.81	2^+	E_γ: 713.8 (2002Ha46).
[x]724.3[#]					
724.4	1434.95	4^+	710.49	2^+	
743.0	3264.1	10^+	2521.1	8^+	
756.5	2951.0	10^+	2194.5	8^+	
772.5	1657.87	5^+	885.44	3^+	
779.9	4372.2	(13^-)	3592.3	(11^-)	
783.6	2090.57	(5^-)	1306.98	5^+	
784.1	2472.7	10^+	1688.4	8^+	E_γ: 783.8 (2002Ha46).
784.4	1306.98	5^+	522.60	4^+	E_γ: 784.5 (2002Ha46).
804.7	3682.1	11^+	2877.4	9^+	
806.8[‡@]	4752.7	(14^-)	3945.9	(12^-)	
811.4	3370.9	11^+	2559.4	9^+	E_γ: 811.0 (2002Ha46).
834.9	1868.4	7^+	1033.48	6^+	E_γ: 834.8 (2002Ha46).
842.5	1910.49	6^+	1068.00	4^+	
861.0	3812.0	12^+	2951.0	10^+	
868.6	4132.7	(12^+)	3264.1	10^+	

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^{252}Cf SF decay 2006Jo05,2005Zh36,2002Xu03 (continued)

γ(^{106}Mo) (continued)

E_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	Comments
869.0	1936.98	(4$^-$)	1068.00	4$^+$	E_γ: 869.1 (2002Ha46).
871.0	2559.4	9$^+$	1688.4	8$^+$	E_γ: 869.8 (2002Ha46).
877.6	2565.9	(8$^+$)	1688.4	8$^+$	E_γ: 876.7 (2002Ha46).
877.8	2566.2	(7$^-$)	1688.4	8$^+$	
878.2	2746.6	(8$^-$)	1868.4	7$^+$	E_γ: 881.6 (2002Ha46).
884.4	1952.4	(5$^-$)	1068.00	4$^+$	
892.8	2199.7	7$^+$	1306.98	5$^+$	E_γ: 893.3 (2002Ha46).
896.2	1068.00	4$^+$	171.81	2$^+$	E_γ: 898.0 (2002Ha46).
896.6	3369.3	12$^+$	2472.7	10$^+$	E_γ: 898.4 (2002Ha46), 889.9 (1996Sm04).
898.3	3370.9	11$^+$	2472.7	10$^+$	
912.3	1434.95	4$^+$	522.60	4$^+$	
921.6	4292.5	13$^+$	3370.9	11$^+$	E_γ: 912.0 (2002Ha46).
931.6	1817.4	(3$^-$)	885.44	3$^+$	
[x]933.9[#]					
935.6	2499.0	(7$^-$)	1563.38	6$^+$	
945.9	4757.9	14$^+$	3812.0	12$^+$	
969.5	2276.5	(6$^-$)	1306.98	5$^+$	E_γ: 969.1 (2002Ha46).
978.2	1150.01	(2$^+$)	171.81	2$^+$	
981.5	2015.0	(6$^+$)	1033.48	6$^+$	E_γ: 980.8 (2002Ha46).
991.7	4361.0	14$^+$	3369.3	12$^+$	E_γ: 991.6 (2002Ha46).
1014.1	1536.71	(4$^+$)	522.60	4$^+$	E_γ: 1014.2 (2002Ha46).
1022.6	2090.57	(5$^-$)	1068.00	4$^+$	
1024.9	2713.3	(7$^+$)	1688.4	8$^+$	
1040.8	1563.38	6$^+$	522.60	4$^+$	E_γ: 1040.7 (2002Ha46).
1051.6	1936.98	(4$^-$)	885.44	3$^+$	
1057.1	2090.57	(5$^-$)	1033.48	6$^+$	
1058.2	2746.6	(8$^-$)	1688.4	8$^+$	
1064.2	5425.2	16$^+$	4361.0	14$^+$	
1107.0	1817.4	(3$^-$)	710.49	2$^+$	
1113.5	2147.0	(5$^-$)	1033.48	6$^+$	
1150.0	1150.01	(2$^+$)	0	0$^+$	
1161.0	2194.5	8$^+$	1033.48	6$^+$	E_γ: 1162.6 (2002Ha46).
1243.0	2276.5	(6$^-$)	1033.48	6$^+$	
1262.5	2951.0	10$^+$	1688.4	8$^+$	
1263.1	1434.95	4$^+$	171.81	2$^+$	
1269.4	2302.9	(5$^+$)	1033.48	6$^+$	
1364.9	1536.71	(4$^+$)	171.81	2$^+$	
1414.4	1936.98	(4$^-$)	522.60	4$^+$	
1443.9	3132.3	(9$^-$)	1688.4	8$^+$	
1492.4	2015.0	(6$^+$)	522.60	4$^+$	E_γ: 1491.9 (2002Ha46).
1532.5	2565.9	(8$^+$)	1033.48	6$^+$	E_γ: 1531.6 (2002Ha46).
1532.7	2566.2	(7$^-$)	1033.48	6$^+$	
1565.4	3253.8	(9$^+$)	1688.4	8$^+$	E_γ: 1565.5 (2002Ha46).
1624.4	2147.0	(5$^-$)	522.60	4$^+$	
1679.8	2713.3	(7$^+$)	1033.48	6$^+$	E_γ: 1579.9 in 2002Ha46 seems a misprint.
1780.3	2302.9	(5$^+$)	522.60	4$^+$	

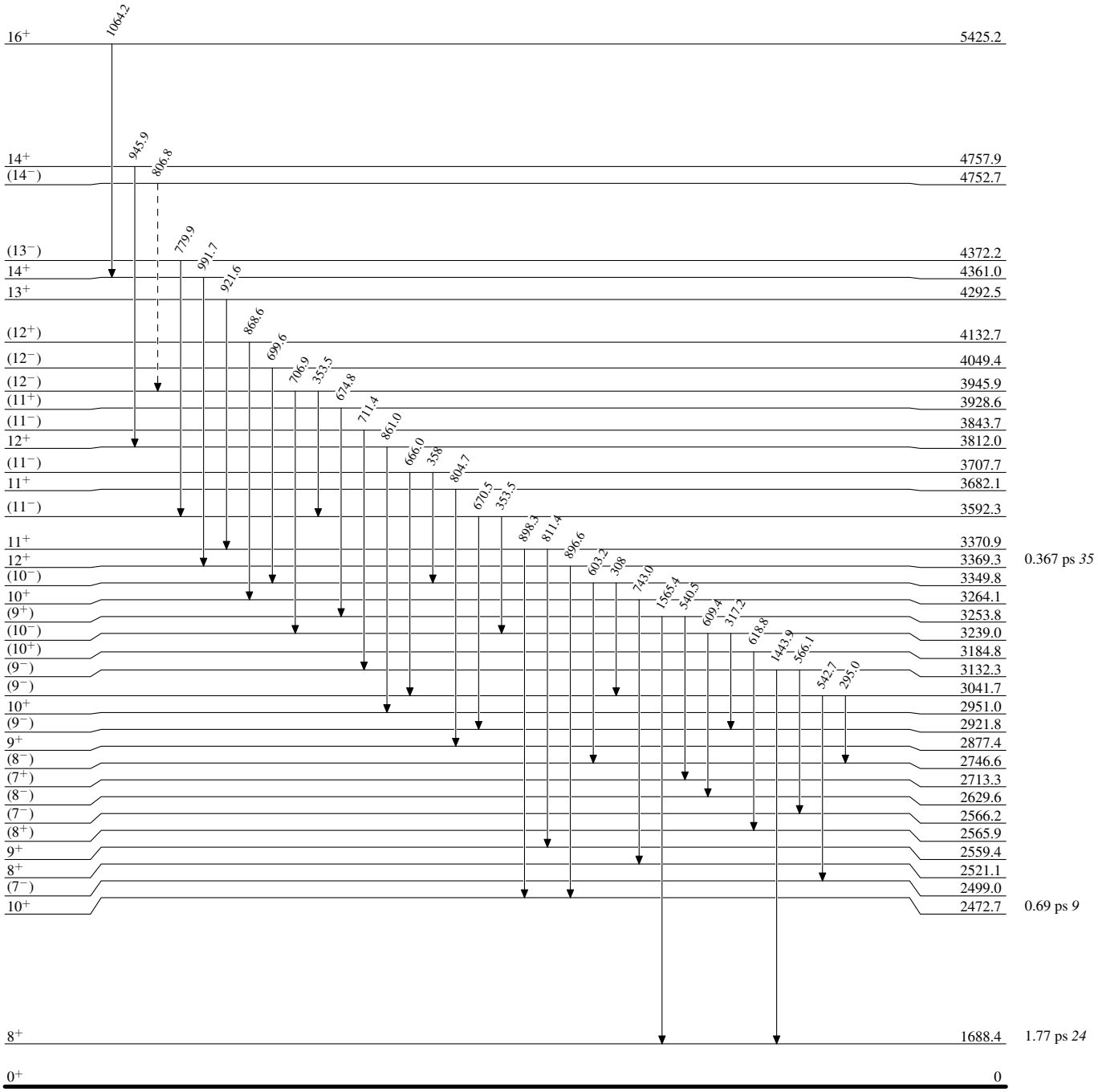
[†] From 2002Xu03, unless noted otherwise.
[‡] From 2006Jo05.
[#] From 2002Ha46.
[@] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

Legend

^{252}Cf SF decay 2006Jo05,2005Zh36,2002Xu03

Level Scheme

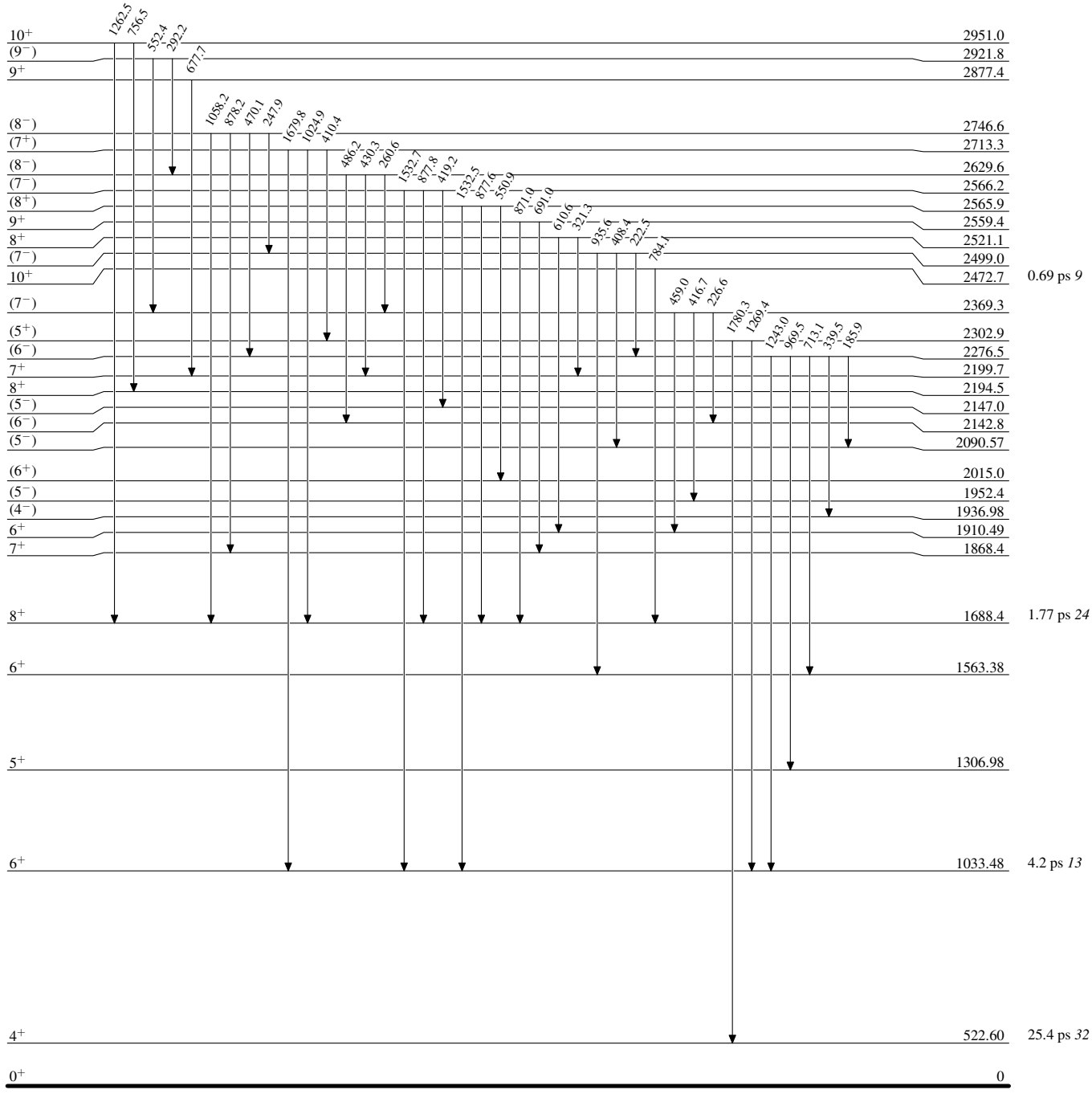
γ Decay (Uncertain)



$^{106}_{42}Mo_{64}$

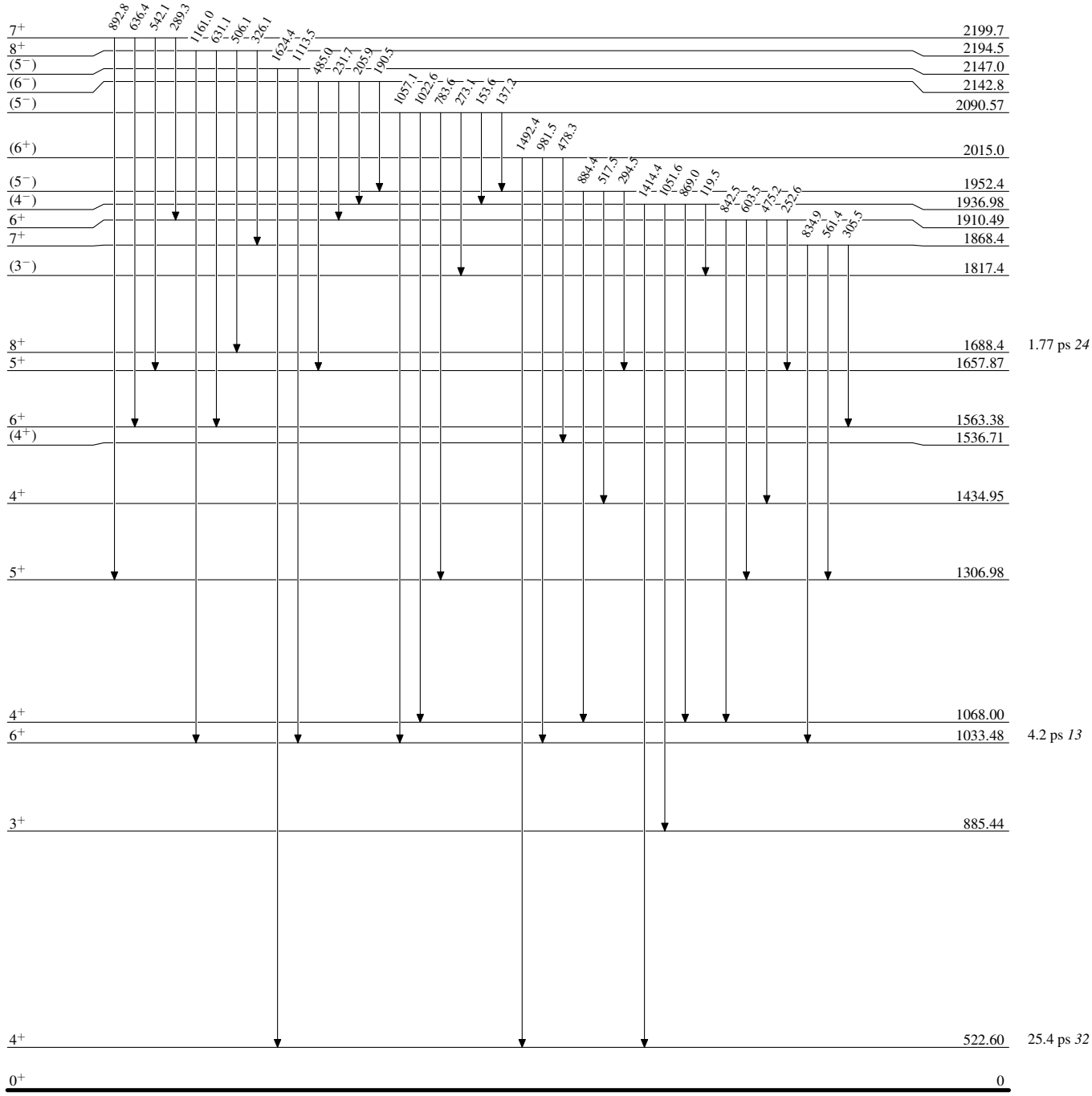
^{252}Cf SF decay 2006Jo05,2005Zh36,2002Xu03

Level Scheme (continued)



^{252}Cf SF decay 2006Jo05,2005Zh36,2002Xu03

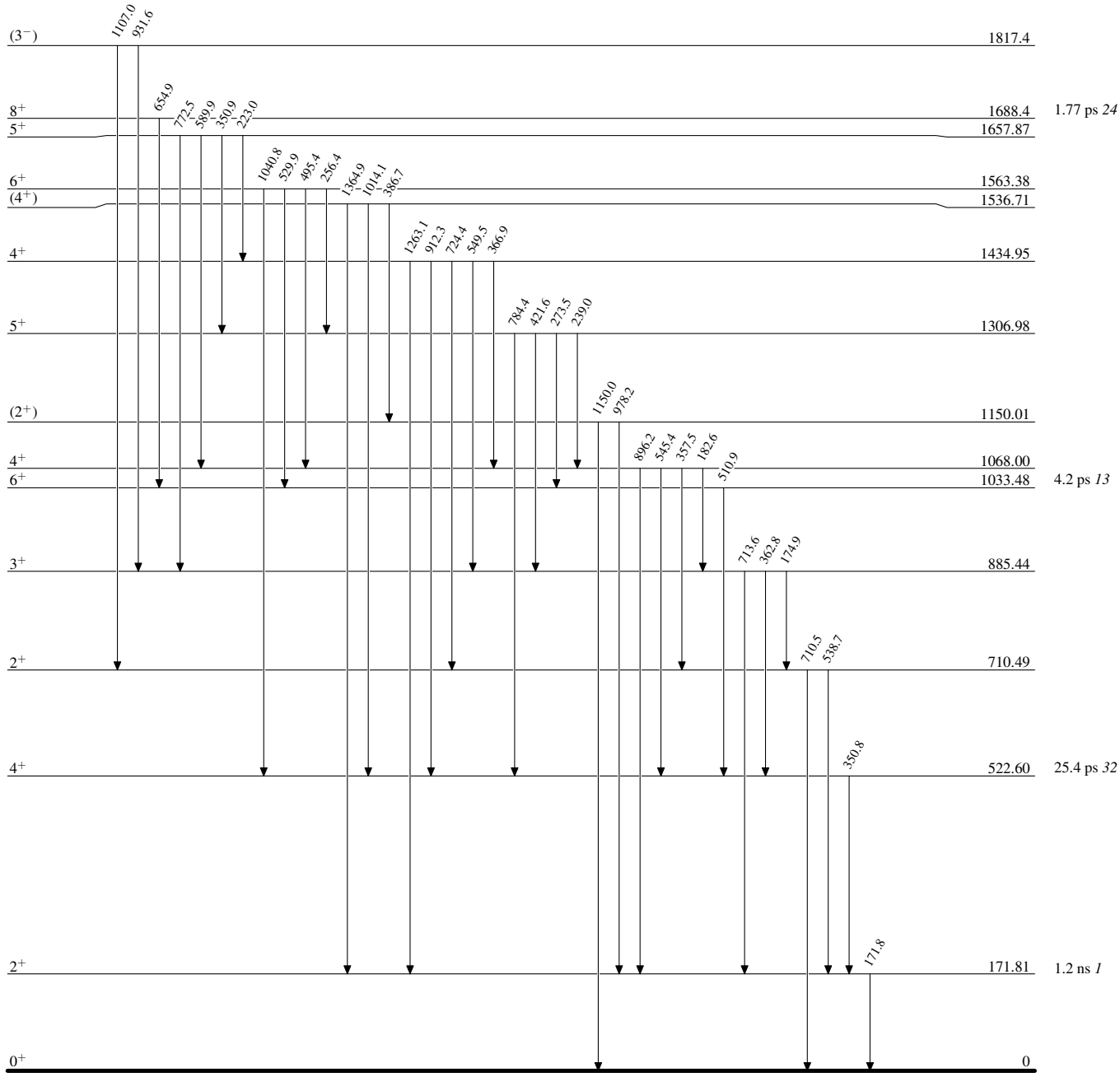
Level Scheme (continued)



$^{106}_{42}Mo_{64}$

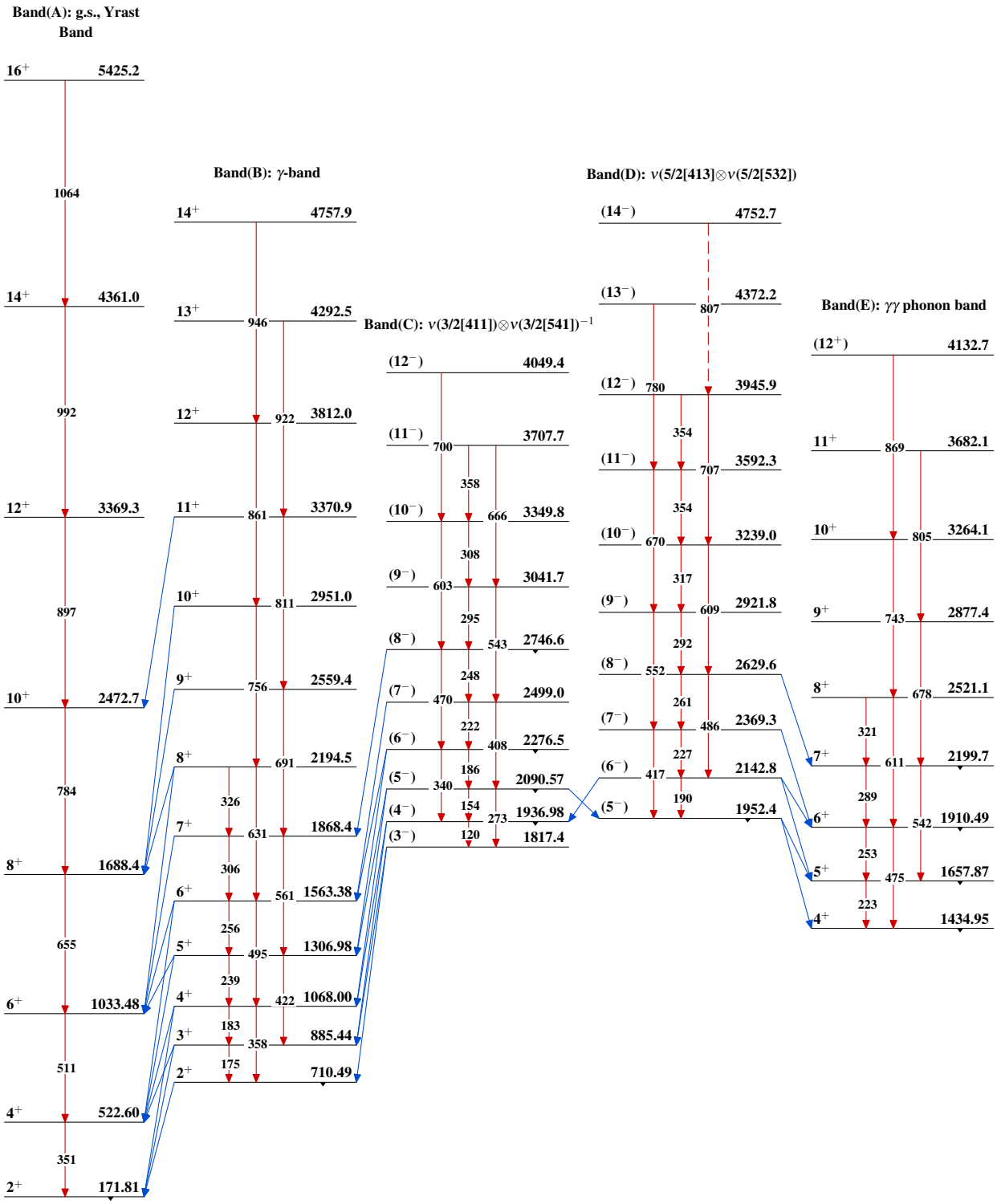
^{252}Cf SF decay 2006Jo05,2005Zh36,2002Xu03

Level Scheme (continued)



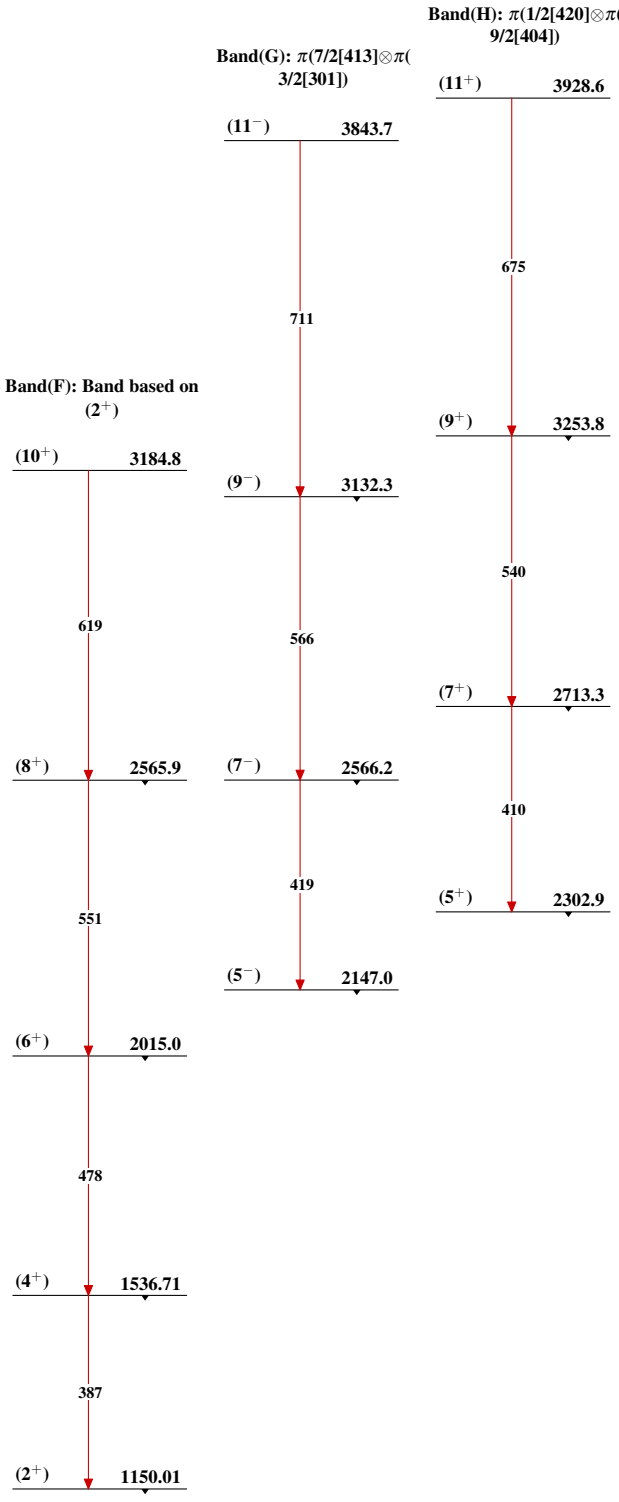
$^{106}_{42}Mo_{64}$

^{252}Cf SF decay 2006Jo05,2005Zh36,2002Xu03



$^{106}_{42}Mo_{64}$

^{252}Cf SF decay 2006Jo05,2005Zh36,2002Xu03 (continued)



$^{106}_{42}Mo_{64}$