

(HI,xn γ) [2001Mo39,1992Ce05](#)

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	K. Kitao, Y. Tendow and A. Hashizume		NDS 96, 241 (2002)	1-Dec-2001

[2001Mo39](#): $^{107}\text{Ag}(^{16}\text{O},3n\gamma)$ E=85 MeV; Compton-suppressed HPGe array; γ , $\gamma\gamma$, $\gamma\gamma(\theta)$; DCO ratio.

[1992Ce05](#): $^{92}\text{Mo}(^{32}\text{S},3pn\gamma)$ E=145 MeV; NORDBALL detector system γ , particle- $\gamma\gamma$ coin.

[1986Qu01](#), [1984QuZX](#): $^{112}\text{Sn}(^{12}\text{C},p3n\gamma)$ E=86 MeV; γ , $\gamma\gamma(t)$, $\gamma(\theta)$, $\gamma(t)$.

[1974Co36](#): $^{106}\text{Cd}(^{16}\text{O},pn\gamma)$ E=57-66 MeV.

The decay scheme is that proposed by [2001Mo39](#) except that for the band labeled with ‘‘H’’ observed in [1992Ce05](#). The band with ‘‘G’’ is identified by both [1992Ce05](#) and [2001Mo39](#), but strong crossover transitions were not reported by [2001Mo39](#).

^{120}Cs Levels

The negative parity band ($\pi g_{9/2} \nu h_{11/2}$) built with levels at 103, 238, 404, 599, 823, 1073, 1345 and (1640) keV proposed by [1986Qu01](#) and [1992Ce05](#) based on 82, 127, 277, 821, 319, 351, 374, (386), 388, 394, 396, 508, 600, 667, 721, (780), 786, 791 keV transitions is not adopted by the evaluators, because [2001Mo39](#) reported that γ 's of this band do not coincide with the Cs x-ray.

E(level) ^c	J^π	$T_{1/2}$	Comments
0	2 ⁽⁺⁾	61.3 s <i>II</i>	$T_{1/2}$: from Adopted Levels.
0.0+x	(7 ⁻)	57 s <i>6</i>	Additional information 1 . $T_{1/2}$: from Adopted Levels.
102.40+x <i>18</i>	(8 ⁻)		
179.40+x <i>18</i>	(8 ⁻)		
237.20+x <i>b</i> ²⁵	(8)		
271.4+x [†] <i>3</i>	(8 ⁻)		
284.9+x [@] <i>3</i>	(9 ⁺)		
326.1+x <i>4</i>	(9)		
336.5+x [#] <i>4</i>	(10 ⁺)		
350.2+x [‡] <i>3</i>	(9 ⁻)		
402.9+x ^b <i>5</i>	(9)		
480.3+x [†] <i>3</i>	(10 ⁻)		
505.4+x [@] <i>4</i>	(11 ⁺)		
536.0+x [#] <i>4</i>	(12 ⁺)		
597.9+x ^b <i>7</i>	(10)		
612.1+x ^{&} <i>4</i>	(10 ⁻)		
658.0+x [‡] <i>4</i>	(11 ⁻)		
821.5+x ^b <i>8</i>	(11)		
832.8+x ^a <i>4</i>	(11 ⁻)		
850.3+x [†] <i>4</i>	(12 ⁻)		
851.9+x [@] <i>5</i>	(13 ⁺)		
975.8+x [#] <i>5</i>	(14 ⁺)		
1031.8+x ^{&} <i>4</i>	(12 ⁻)		
1071.5+x ^b <i>9</i>	(12)		
1108.2+x [‡] <i>4</i>	(13 ⁻)		
1322.6+x ^a <i>5</i>	(13 ⁻)		
1344.3+x ^b <i>10</i>	(13)		
1355.7+x [@] <i>5</i>	(15 ⁺)		
1359.5+x [†] <i>4</i>	(14 ⁻)		
1597.3+x [#] <i>5</i>	(16 ⁺)		

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(HI,xn γ) 2001Mo39,1992Ce05 (continued) ^{120}Cs Levels (continued)

E(level) ^c	J π	E(level) ^c	J π	E(level) ^c	J π	E(level) ^c
1613.9+x ^{&} 5	(14 ⁻)	2363.6+x [#] 5	(18 ⁺)	3637.8+x [@] 6	(21 ⁺)	5645.9+x [@] 13
1639.1+x ^b 11	(14)	2376.5+x [‡] 5	(17 ⁻)	4051.8+x [‡] 6	(21 ⁻)	6044.0+x [‡] 9
1684.9+x [‡] 4	(15 ⁻)	2674.30 ^a 7	(17 ⁻)	4234.6+x [#] 7	(22 ⁺)	6439.6+x [#] 16
1945.1+x ^a 5	(15 ⁻)	2740.9+x [†] 5	(18 ⁻)	4534.0+x [†] 7	(22 ⁻)	6770.9+x [@] 16
1959.1+x ^b 11	(15)	2766.6+x [@] 5	(19 ⁺)	4600.9+x [@] 7	(23 ⁺)	7126.0+x [‡] 13
1993.9+x [†] 5	(16 ⁻)	3169.6+x [‡] 5	(19 ⁻)	5013.4+x [‡] 7	(23 ⁻)	
2000.3+x [@] 5	(17 ⁺)	3248.5+x [#] 6	(20 ⁺)	5304.6+x [#] 12		
2305.1+x ^{&} 6	(16 ⁻)	3590.4+x [†] 5	(20 ⁻)	5555.7+x [†] 9		

[†] Band(A): $\pi h_{11/2} \nu g_{7/2}$, $\alpha=0$.

[‡] Band(B): $\pi h_{11/2} \nu g_{7/2}$, $\alpha=1$.

[#] Band(C): $\pi h_{11/2} \nu h_{11/2}$, $\alpha=0$.

[@] Band(D): $\pi h_{11/2} \nu h_{11/2}$, $\alpha=1$.

[&] Band(E): $\pi h_{11/2} \nu 5/2[402]$, $\alpha=0$.

^a Band(F): $\pi h_{11/2} \nu 5/2[402]$, $\alpha=1$.

^b Band(G): $\pi g_{9/2} \nu h_{11/2}$ or $\pi g_{9/2} \nu g_{7/2}$.

^c From a least-squares fit to $E\gamma$'s by the evaluators.

 $\gamma(^{120}\text{Cs})$

DCO ratios from 2001Mo39.

E(I,K,L) from 1992Ce05. Not reported in 2001Mo39.

E(K,J,L) No intensity was given by authors.

$E\gamma$ [†]	$I\gamma$ [†]	E_i (level)	J_i^π	E_f	J_f^π	Mult. ^b	Comments
(10.4)		336.5+x	(10 ⁺)	326.1+x	(9)		
30.6		536.0+x	(12 ⁺)	505.4+x	(11 ⁺)		
51.6 4	1.7 7	336.5+x	(10 ⁺)	284.9+x	(9 ⁺)	(M1+E2)	DCO=0.7 3.
54.7 4	2.3 9	326.1+x	(9)	271.4+x	(8 ⁻)		
77.0 4	7 3	179.40+x	(8 ⁻)	102.40+x	(8 ⁻)	(M1+E2)	
78.8 2	29.3 7	350.2+x	(9 ⁻)	271.4+x	(8 ⁻)	(M1+E2)	DCO=0.70 18.
88.9 4	2.6 10	326.1+x	(9)	237.20+x	(8)	(M1+E2)	DCO=0.5 2.
92.0 2	44 11	271.4+x	(8 ⁻)	179.40+x	(8 ⁻)	(M1+E2)	DCO=0.8 2.
^x 92 [‡]							
99.3 4	1.0 4	336.5+x	(10 ⁺)	237.20+x	(8)		
102.4 2	60 15	102.40+x	(8 ⁻)	0.0+x	(7 ⁻)	(M1+E2)	DCO=0.70 18.
123.9 4	8.3 21	975.8+x	(14 ⁺)	851.9+x	(13 ⁺)	(M1+E2)	DCO=0.7 3.
130.1 2	55 14	480.3+x	(10 ⁻)	350.2+x	(9 ⁻)	(M1+E2)	DCO=0.60 15.
134.8 2	11 3	237.20+x	(8)	102.40+x	(8 ⁻)	D+Q	DCO=0.8 2.
							Mult.: M1+E2 quoted by 2001Mo39.
165.7 4	2.0 8	402.9+x	(9)	237.20+x	(8)	(M1+E2)	
168.9 2	79 20	505.4+x	(11 ⁺)	336.5+x	(10 ⁺)	(M1+E2)	DCO=0.60 15.
177.7 2	29 7	658.0+x	(11 ⁻)	480.3+x	(10 ⁻)	(M1+E2)	DCO=0.60 13.
179.4 2	71 18	179.40+x	(8 ⁻)	0.0+x	(7 ⁻)	(M1+E2)	DCO=0.8 2.
							$E\gamma$: other: 176 (1992Ce05).
182.5 2	100	284.9+x	(9 ⁺)	102.40+x	(8 ⁻)	(E1)	DCO=0.70 18.
192.3 2	14 4	850.3+x	(12 ⁻)	658.0+x	(11 ⁻)	(M1+E2)	DCO=0.50 13.

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(HI,xn γ) 2001Mo39,1992Ce05 (continued) $\gamma(^{120}\text{Cs})$ (continued)

E_γ [†]	I_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^b	Comments
195.0 4	2.2 9	597.9+x	(10)	402.9+x	(9)	(M1+E2)	
199.0 4	8.0 20	1031.8+x	(12 ⁻)	832.8+x	(11 ⁻)	(M1+E2)	
199.5 2	78 20	536.0+x	(12 ⁺)	336.5+x	(10 ⁺)	(E2)	DCO=1.2 3.
208.9 2	12 3	480.3+x	(10 ⁻)	271.4+x	(8 ⁻)	(E2)	DCO=1.2 3.
220.7 2	15 4	832.8+x	(11 ⁻)	612.1+x	(10 ⁻)	(M1+E2)	DCO=0.8 3.
223.6 4	1.3 5	821.5+x	(11)	597.9+x	(10)	(M1+E2)	
^x 234 [‡]							
^x 241.3 5							
250.0 4	1.0 4	1071.5+x	(12)	821.5+x	(11)	(M1+E2)	
251.3 4	4.2 17	1359.5+x	(14 ⁻)	1108.2+x	(13 ⁻)	(M1+E2)	DCO=0.5 2.
257.9 2	14 4	1108.2+x	(13 ⁻)	850.3+x	(12 ⁻)	(M1+E2)	DCO=0.4 1.
261.9 2	18 6	612.1+x	(10 ⁻)	350.2+x	(9 ⁻)	(M1+E2)	DCO=0.70 18 ($\Delta J=1$ gated).
272.8 4	0.8 3	1344.3+x	(13)	1071.5+x	(12)	(M1+E2)	
290.8 4	8& 3	1322.6+x	(13 ⁻)	1031.8+x	(12 ⁻)	(M1+E2)	DCO=0.60 24 for doublet (290.8 γ +291.3 γ).
291.3 4	8& 3	1613.9+x	(14 ⁻)	1322.6+x	(13 ⁻)	(M1+E2)	DCO=0.6 for doublet (290.8 γ +291.3 γ).
294.8 4	0.40 16	1639.1+x	(14)	1344.3+x	(13)	(M1+E2)	
307.8 2	39 10	658.0+x	(11 ⁻)	350.2+x	(9 ⁻)	(E2)	Mult.: M1/E2 in 2001Mo39 seems a misprint. DCO=1.9 5 ($\Delta J=1$ gated).
315.9 2	29 7	851.9+x	(13 ⁺)	536.0+x	(12 ⁺)	(M1+E2)	DCO=0.4 1.
320.0 4	0.20 8	1959.1+x	(15)	1639.1+x	(14)	(M1+E2)	
325.4 4	5.1 20	1684.9+x	(15 ⁻)	1359.5+x	(14 ⁻)	(M1+E2)	DCO=0.30 12.
331.2 4	2.5 10	1945.1+x	(15 ⁻)	1613.9+x	(14 ⁻)	(M1+E2)	
346.5 4	0.5 2	851.9+x	(13 ⁺)	505.4+x	(11 ⁺)	(E2)	I_γ : other: 37 3, but including γ 's from contaminants (1992Ce05).
360.0 4	1.8 7	2305.1+x	(16 ⁻)	1945.1+x	(15 ⁻)	(M1+E2)	
370.0 2	50 13	850.3+x	(12 ⁻)	480.3+x	(10 ⁻)	(E2)	DCO=1.2 3.
373.8 4	7 3	1031.8+x	(12 ⁻)	658.0+x	(11 ⁻)	(M1+E2)	DCO=0.8 5.
379.9 2	28 7	1355.7+x	(15 ⁺)	975.8+x	(14 ⁺)	(M1+E2)	DCO=0.4 1.
382 ^e		2376.5+x	(17 ⁻)	1993.9+x	(16 ⁻)		
389.2 5	7.5 ^a 8	3637.8+x	(21 ⁺)	3248.5+x	(20 ⁺)		
403.0 ^c 4	32 ^c 8	2000.3+x	(17 ⁺)	1597.3+x	(16 ⁺)	(M1+E2)	DCO=0.3 for doublet.
403.0 ^c 4	32 ^c 8	2766.6+x	(19 ⁺)	2363.6+x	(18 ⁺)	(M1+E2)	DCO=0.3 for doublet.
^x 419 [@] 1							
419.7 4	7.8 20	1031.8+x	(12 ⁻)	612.1+x	(10 ⁻)	(E2)	DCO=1.9 5 ($\Delta J=1$ gated).
439.8 2	98 24	975.8+x	(14 ⁺)	536.0+x	(12 ⁺)	(E2)	DCO=1.00 25.
^x 450 [‡]							
450.2 2	41 10	1108.2+x	(13 ⁻)	658.0+x	(11 ⁻)	(E2)	DCO=0.90 23.
^x 473 [@] 5							
489.8 4	6 3	1322.6+x	(13 ⁻)	832.8+x	(11 ⁻)	(E2)	DCO=1.1 4.
503.8 4	5.3 21	1355.7+x	(15 ⁺)	851.9+x	(13 ⁺)	(E2)	DCO=1.1 4.
509.2 2	47 12	1359.5+x	(14 ⁻)	850.3+x	(12 ⁻)	(E2)	DCO=0.90 23.
^x 521 [@] 1							
^x 566 [@] 1							
576.7 2	39 10	1684.9+x	(15 ⁻)	1108.2+x	(13 ⁻)	(E2)	DCO=1.00 25.
582.1 2	11 3	1613.9+x	(14 ⁻)	1031.8+x	(12 ⁻)	(E2)	DCO=1.1 3.
621.5 2	84 21	1597.3+x	(16 ⁺)	975.8+x	(14 ⁺)	(E2)	DCO=1.00 25.
622.5 4	7 3	1945.1+x	(15 ⁻)	1322.6+x	(13 ⁻)	(E2)	DCO=1.1 4.
634.4 2	46 11	1993.9+x	(16 ⁻)	1359.5+x	(14 ⁻)	(E2)	DCO=0.90 23.
644.6 2	16 4	2000.3+x	(17 ⁺)	1355.7+x	(15 ⁺)	(E2)	DCO=1.00 25.
691.2 4	7 3	2305.1+x	(16 ⁻)	1613.9+x	(14 ⁻)	(E2)	
691.6 2	31 8	2376.5+x	(17 ⁻)	1684.9+x	(15 ⁻)	(E2)	DCO=0.90 26.
^x 692 [‡]							
729.2 4	7 3	2674.30	(17 ⁻)			(E2)	

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(HI,xn γ) 2001Mo39,1992Ce05 (continued) $\gamma(^{120}\text{Cs})$ (continued)

E_γ [†]	I_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ^b	Comments
747.0 2	24 6	2740.9+x	(18 ⁻)	1993.9+x	(16 ⁻)	(E2)	DCO=1.00 25.
766.3 ^d 2	51 ^d 13	2363.6+x	(18 ⁺)	1597.3+x	(16 ⁺)	(E2)	DCO=1.00 25.
766.3 ^d 2	12 ^d 3	2766.6+x	(19 ⁺)	2000.3+x	(17 ⁺)	(E2)	DCO=1.00 25.
793.1 2	24 6	3169.6+x	(19 ⁻)	2376.5+x	(17 ⁻)	(E2)	DCO=0.90 23.
849.5 2	12 5	3590.4+x	(20 ⁻)	2740.9+x	(18 ⁻)	(E2)	DCO=0.90 23.
871.3 4	6.2 25	3637.8+x	(21 ⁺)	2766.6+x	(19 ⁺)	(E2)	DCO=0.9 4.
882.2 2	10 3	4051.8+x	(21 ⁻)	3169.6+x	(19 ⁻)	(E2)	DCO=1.00 25.
884.8 2	13 3	3248.5+x	(20 ⁺)	2363.6+x	(18 ⁺)	(E2)	DCO=1.1 3.
943.6 4	7 3	4534.0+x	(22 ⁻)	3590.4+x	(20 ⁻)	(E2)	DCO=1.1 4.
961.6 4	5.6 22	5013.4+x	(23 ⁻)	4051.8+x	(21 ⁻)	(E2)	DCO=1.0 4.
963.1 4	5.2 21	4600.9+x	(23 ⁺)	3637.8+x	(21 ⁺)	(E2)	DCO=1.1 4.
986.1 4	4.5 18	4234.6+x	(22 ⁺)	3248.5+x	(20 ⁺)	(E2)	DCO=1.0 4.
1021.7 5		5555.7+x		4534.0+x	(22 ⁻)		$I_\gamma=13.0$ 13 (1992Ce05).
1030.6 5		6044.0+x		5013.4+x	(23 ⁻)		$I_\gamma=20.1$ 20 (1992Ce05).
1045 [#] 1		5645.9+x		4600.9+x	(23 ⁺)		
1070 1		5304.6+x		4234.6+x	(22 ⁺)		
1082 1		7126.0+x		6044.0+x			
1125 1		6770.9+x		5645.9+x			
1135 1		6439.6+x		5304.6+x			

[†] From 2001Mo39, unless otherwise noted. Relative to I(182.5 γ)=100.

[‡] From authors' drawing (1985QuZZ).

[#] Includes γ 's from contaminants.

[@] Reported As crossover transitions In band labeled "G" In 1992Ce05.

[&] Given for a doublet (290.8 γ +291.3 γ).

^a Given for a doublet (388.1 γ +389.2 γ).

^b Proposed by 2001Mo39 from DCO ratio, unless otherwise noted.

^c Multiply placed with undivided intensity.

^d Multiply placed with intensity suitably divided.

^e Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

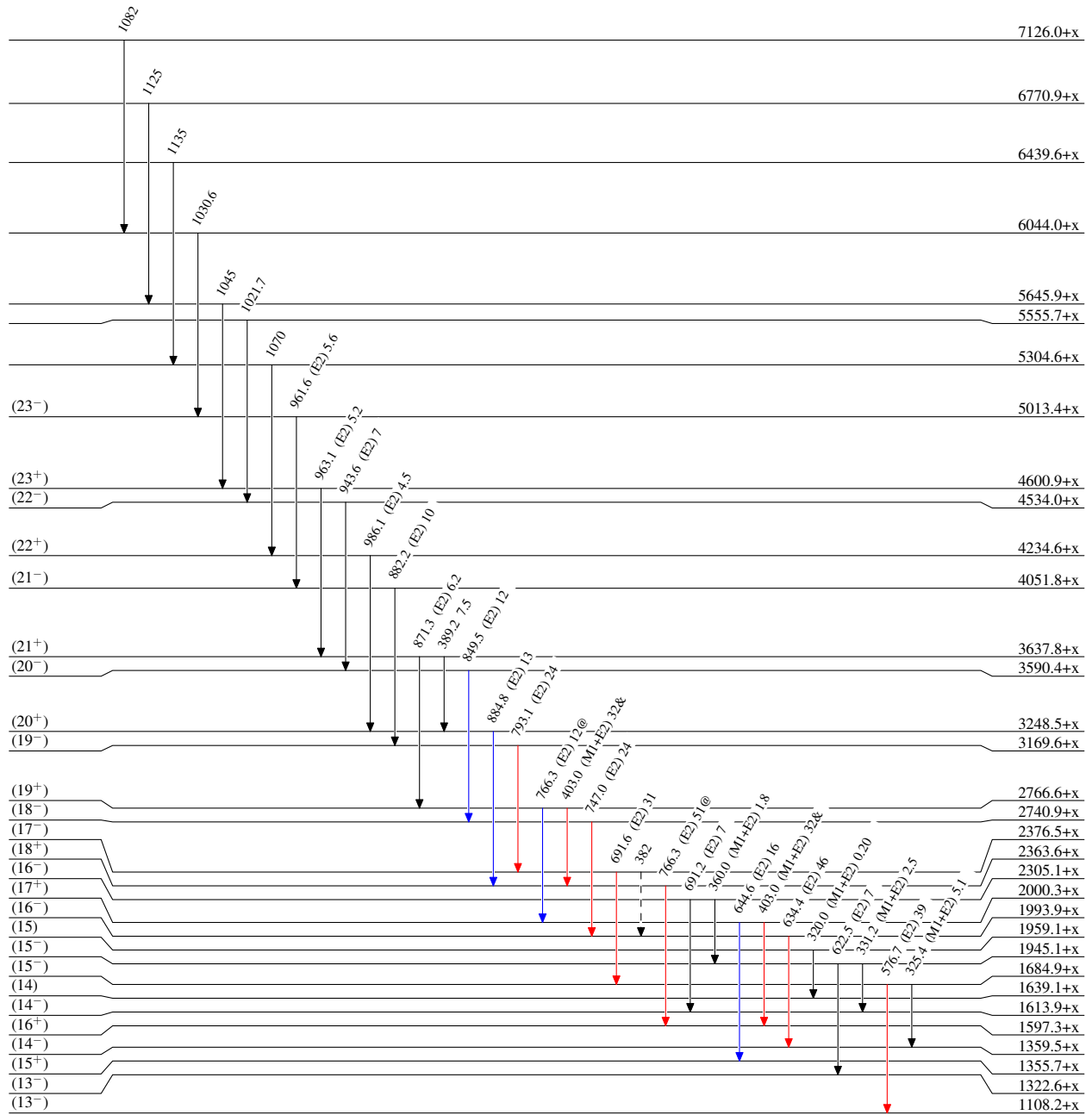
(HI,xn γ) 2001Mo39,1992Ce05

Level Scheme

Intensities: Relative I γ
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

Legend

- \longrightarrow I γ < 2% \times I γ^{max}
- \longrightarrow I γ < 10% \times I γ^{max}
- \longrightarrow I γ > 10% \times I γ^{max}
- - - - \longrightarrow γ Decay (Uncertain)



2(+)

0

61.3 s 11

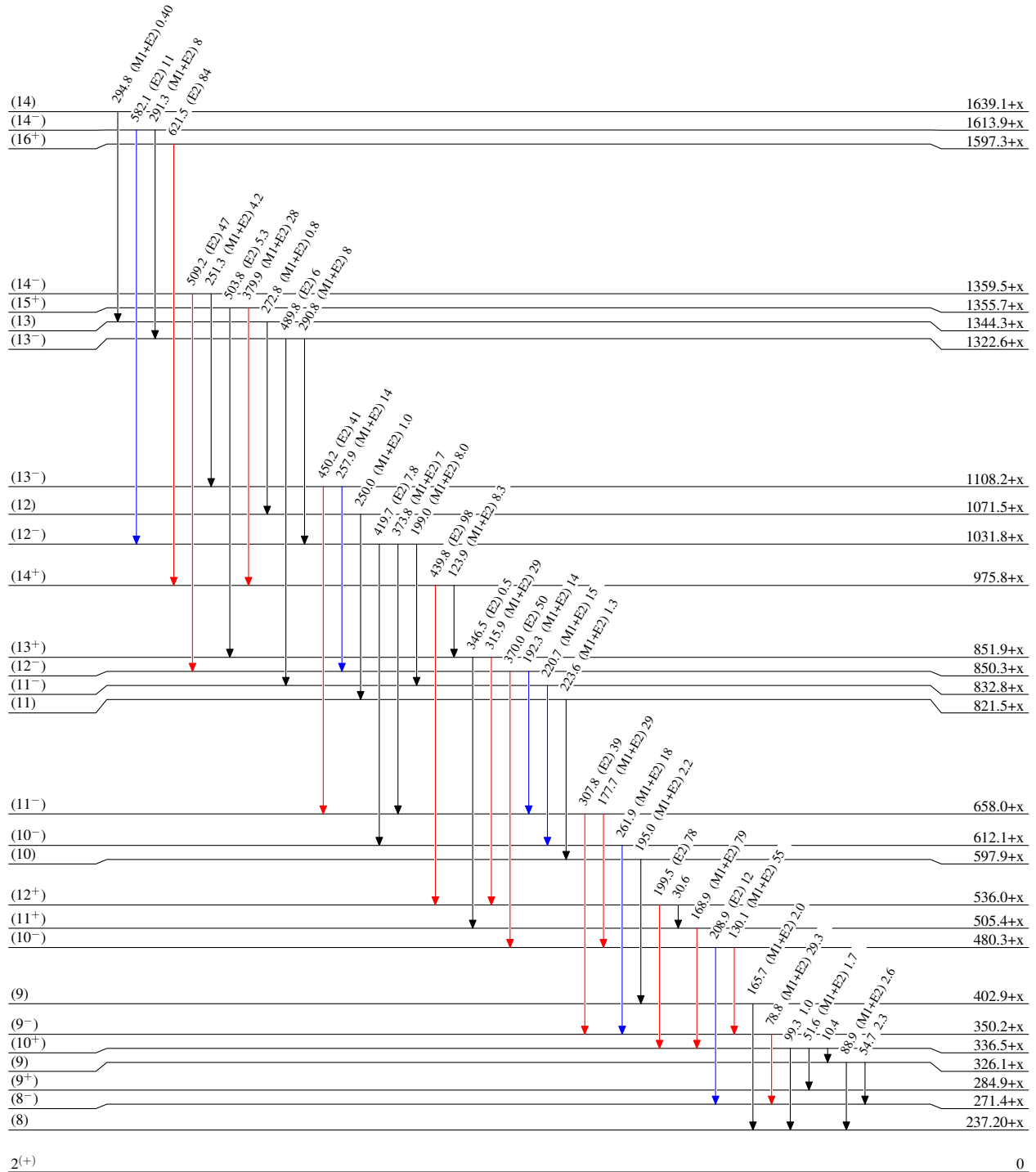
(HI,xn γ) 2001Mo39,1992Ce05

Level Scheme (continued)

Legend

Intensities: Relative I γ
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

- I γ < 2% \times I γ^{max}
- I γ < 10% \times I γ^{max}
- I γ > 10% \times I γ^{max}
- - - - - γ Decay (Uncertain)

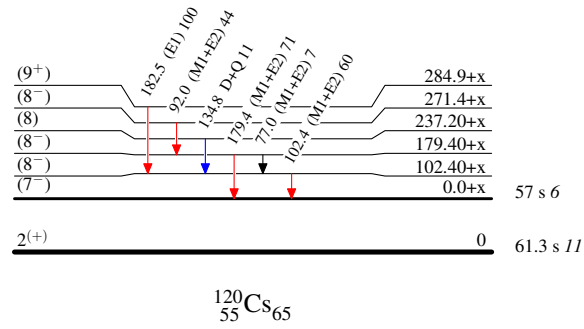


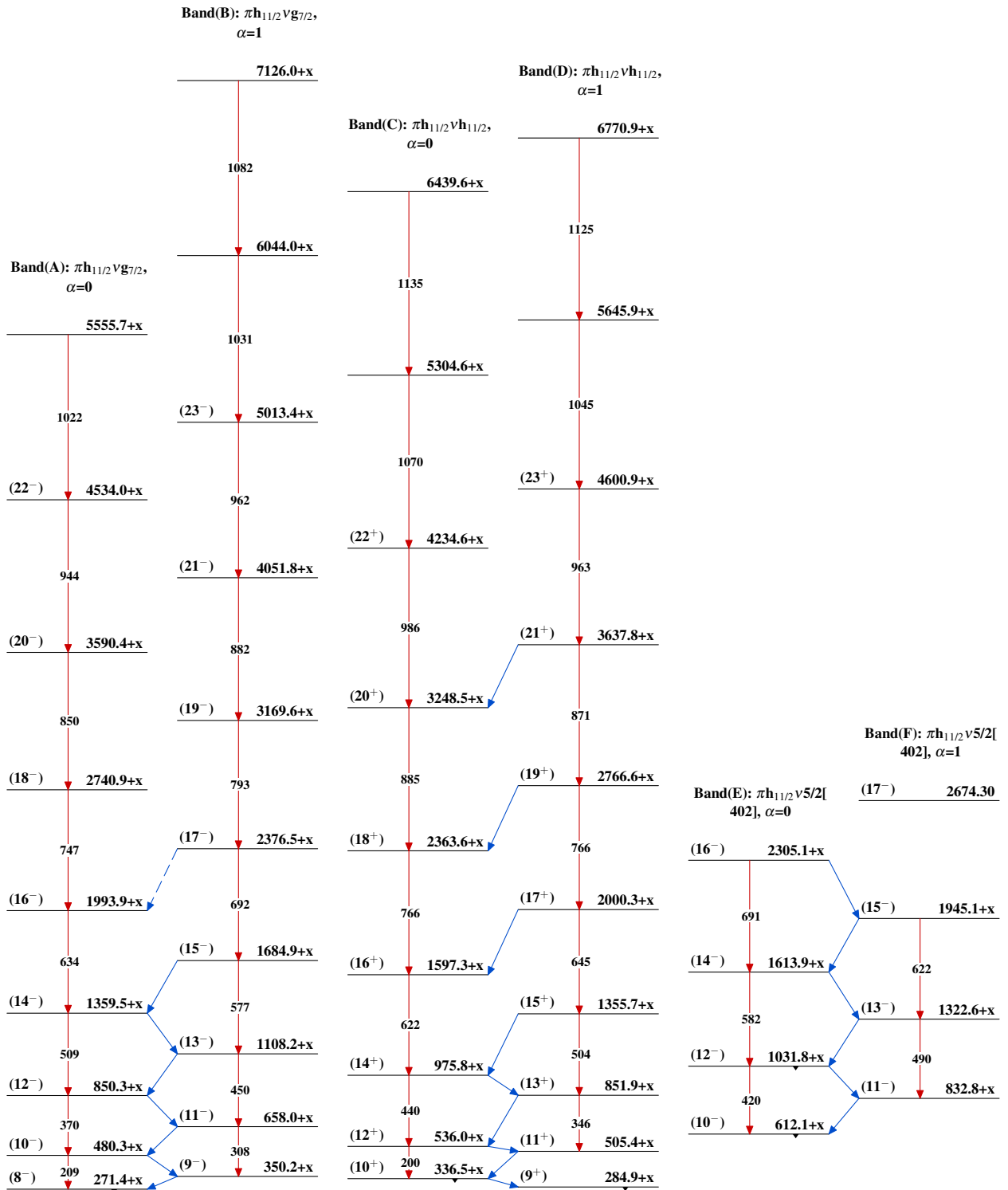
(HI,xn γ) 2001Mo39,1992Ce05**Level Scheme (continued)**

Intensities: Relative I_γ
 & Multiply placed: undivided intensity given
 @ Multiply placed: intensity suitably divided

Legend

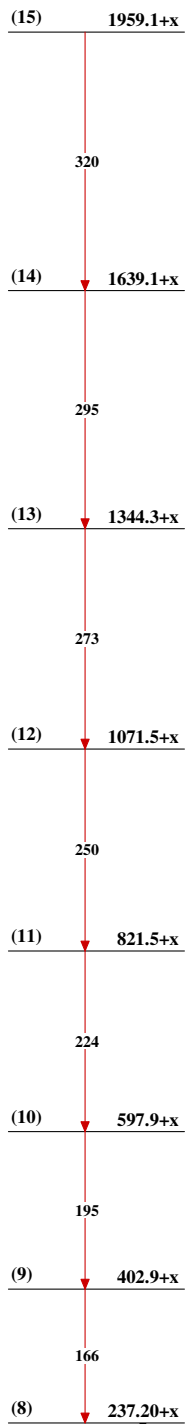
→ $I_\gamma < 2\% \times I_\gamma^{max}$
 → $I_\gamma < 10\% \times I_\gamma^{max}$
 → $I_\gamma > 10\% \times I_\gamma^{max}$



(HI,xn) 2001Mo39,1992Ce05 $^{120}_{55}\text{Cs}_{65}$

(HI,xn γ) 2001Mo39,1992Ce05 (continued)

Band(G): $\pi g_{9/2} \nu h_{11/2}$
or $\pi g_{9/2} \nu g_{7/2}$

 $^{120}_{55}\text{Cs}_{65}$