

**(HI,xnγ) 1996Ch36,1995Mo24**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 113, 2391 (2012)	1-Sep-2012

1996Ch36: <sup>100</sup>Mo(<sup>19</sup>F,4n) E=82 MeV.

Measured E<sub>γ</sub>, I<sub>γ</sub>, γγ(t), γ(θ), DCO, Five HP Ge detectors with anti compton shields and a 14-element NaI multiplicity filter, 200 ps coin window.

1995Mo24: <sup>89</sup>Y(<sup>29</sup>Si,2pn) E=108 MeV.

Measured E<sub>γ</sub>, γγ, γ(θ), DCO ratios, six Ge detectors with BGO anti compton shields γγ coin.

The level scheme is from 1996Ch36. Results in 1995Mo24 agree upto the 23/2<sup>+</sup> level in Band A, to the 35/2<sup>-</sup> level in Band B, but they have not seen Band C and Band D.

R(DCO)=(I<sub>γ</sub> at 15° gated by Q at 75°)/(I<sub>γ</sub> at 75° gated by Q at 15°).

<sup>115</sup>Sb Levels

E(level)	J <sup>π</sup> †	T <sub>1/2</sub>	E(level)	J <sup>π</sup> †	E(level)	J <sup>π</sup> †
0.0	5/2 <sup>+</sup>		3659.0 7	25/2 <sup>+</sup>	5333.1 & 9	(31/2 <sup>-</sup> )
723.78 19	7/2 <sup>+</sup>		3692.0 ‡ 4	21/2 <sup>+</sup>	5632.0 @ 6	31/2 <sup>-</sup>
1098.6 3	7/2 <sup>+</sup>		3791.2 & 7	(23/2) <sup>-</sup>	5634.9 ‡ 5	31/2 <sup>+</sup>
1300.20 24	11/2 <sup>-</sup>		4110.5 & 7	(25/2) <sup>-</sup>	5703.5 8	
1326.80 22	9/2 <sup>+</sup>		4119.4 ‡ 5	23/2 <sup>+</sup>	5783.9 8	
1380.34 ‡ 22	9/2 <sup>+</sup>		4261.9 # 6	27/2 <sup>-</sup>	5794.1 & 8	(33/2 <sup>-</sup> )
1754.6 ‡ 3	11/2 <sup>+</sup>		4282.4 7		6029.2 ‡ 6	33/2 <sup>+</sup>
2092.2 ‡ 3	13/2 <sup>+</sup>		4344.5 7		6068.4 # 8	35/2 <sup>-</sup>
2315.9 4	13/2 <sup>-</sup>		4490.7 & 7	(27/2) <sup>-</sup>	6203.4 9	
2457.0 ‡ 4	15/2 <sup>+</sup>		4510.1 ‡ 5	25/2 <sup>+</sup>	6348.4 @ 7	35/2 <sup>-</sup>
2516.9 # 4	15/2 <sup>-</sup>		4550.7 @ 5	23/2 <sup>-</sup>	6431.9 ‡ 6	35/2 <sup>+</sup>
2638.3 4	15/2 <sup>-</sup>		4732.3 7		6885.7 ‡ 6	37/2 <sup>+</sup>
2796.1 4	19/2 <sup>-</sup>	159 <sup>a</sup> ns 3	4884.7 ‡ 5	27/2 <sup>+</sup>	7120.0 # 8	39/2 <sup>-</sup>
2837.7 ‡ 4	17/2 <sup>+</sup>		4899.4 & 7	(29/2) <sup>-</sup>	7171.7 @ 8	39/2 <sup>-</sup>
2960.3 # 5	19/2 <sup>-</sup>		4984.6 13		8103.9 @ 8	43/2 <sup>-</sup>
3003.5 5	21/2 <sup>-</sup>		5034.2 @ 5	27/2 <sup>-</sup>	8256.0 # 13	43/2 <sup>-</sup>
3254.8 ‡ 4	19/2 <sup>+</sup>		5108.8 # 7	31/2 <sup>-</sup>	9150.5 @ 9	47/2 <sup>-</sup>
3444.9 6	23/2 <sup>-</sup>		5149.3 7	31/2 <sup>-</sup>	10305.3 @ 10	51/2 <sup>-</sup>
3541.6 # 5	23/2 <sup>-</sup>		5244.4 ‡ 5	29/2 <sup>+</sup>		
3543.9 6	(21/2 <sup>-</sup> )		5330 1			

† As given by 1996Ch36 based on DCO ratios, previously known multipolarities and deduced band structure.

‡ Band(A): 9/2(404) band; rotational interpretation of ΔJ=1 sequence is consistent with level spacings.

# Band(B): Intruder-rotational band ΔJ=2.

@ Band(C): Intruder-rotational band ΔJ=2.

& Band(D): Strongly-coupled band ΔJ=1.

<sup>a</sup> From Adopted Levels.

γ(<sup>115</sup>Sb)

E <sub>γ</sub> †	I <sub>γ</sub> †	E <sub>i</sub> (level)	J <sub>i</sub> <sup>π</sup>	E <sub>f</sub>	J <sub>f</sub> <sup>π</sup>	Mult. ‡
157.8 3	28	2796.1	19/2 <sup>-</sup>	2638.3	15/2 <sup>-</sup>	E2 #
207.4 3	72	3003.5	21/2 <sup>-</sup>	2796.1	19/2 <sup>-</sup>	M1,E2 #
214.1 3	46	3659.0	25/2 <sup>+</sup>	3444.9	23/2 <sup>-</sup>	E1 #

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**(HI,xny) 1996Ch36,1995Mo24 (continued)** $\gamma(^{115}\text{Sb})$  (continued)

$E_\gamma$ <sup>†</sup>	$I_\gamma$ <sup>†</sup>	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. <sup>‡</sup>	Comments
247.3	3	12	3791.2	(23/2) <sup>-</sup>	3543.9	(21/2) <sup>-</sup>	(M1,E2)
279.2	3	62	2796.1	19/2 <sup>-</sup>	2516.9	15/2 <sup>-</sup>	E2 <sup>#</sup>
319.4	3	4	4110.5	(25/2) <sup>-</sup>	3791.2	(23/2) <sup>-</sup>	(M1,E2)
322.3	3	<2	2638.3	15/2 <sup>-</sup>	2315.9	13/2 <sup>-</sup>	M1,E2 <sup>#</sup>
337.4	3	58	2092.2	13/2 <sup>+</sup>	1754.6	11/2 <sup>+</sup>	M1,E2
359.5	3	31	5244.4	29/2 <sup>+</sup>	4884.7	27/2 <sup>+</sup>	M1,E2
364.8	3	52	2457.0	15/2 <sup>+</sup>	2092.2	13/2 <sup>+</sup>	M1,E2
374.3	@ 3	76	1754.6	11/2 <sup>+</sup>	1380.34	9/2 <sup>+</sup>	M1,E2 <sup>#</sup>
374.3	3		4884.7	27/2 <sup>+</sup>	4510.1	25/2 <sup>+</sup>	M1,E2
380.6	@ 3	52	2837.7	17/2 <sup>+</sup>	2457.0	15/2 <sup>+</sup>	M1,E2
380.6	@ 3	52	4490.7	(27/2) <sup>-</sup>	4110.5	(25/2) <sup>-</sup>	(M1,E2)
390.6	@ 3	51	4510.1	25/2 <sup>+</sup>	4119.4	23/2 <sup>+</sup>	M1,E2
390.6	@ 3	51	5634.9	31/2 <sup>+</sup>	5244.4	29/2 <sup>+</sup>	(M1,E2)
393.6	3	12	6029.2	33/2 <sup>+</sup>	5634.9	31/2 <sup>+</sup>	(M1,E2)
402.2	3	6	6431.9	35/2 <sup>+</sup>	6029.2	33/2 <sup>+</sup>	(M1,E2)
407.8	3	3	4899.4	(29/2) <sup>-</sup>	4490.7	(27/2) <sup>-</sup>	(M1,E2)
416.9	3	34	3254.8	19/2 <sup>+</sup>	2837.7	17/2 <sup>+</sup>	M1,E2
419.5	3		6203.4		5783.9		Mult.: DCO=0.67 11.
427.4	@ 3	40	1754.6	11/2 <sup>+</sup>	1326.80	9/2 <sup>+</sup>	M1,E2 <sup>#</sup>
427.4	@ 3	40	4119.4	23/2 <sup>+</sup>	3692.0	21/2 <sup>+</sup>	M1,E2 <sup>#</sup>
434.7	3	<2	5333.1	(31/2) <sup>-</sup>	4899.4	(29/2) <sup>-</sup>	(M1,E2)
436.9	3	31	3692.0	21/2 <sup>+</sup>	3254.8	19/2 <sup>+</sup>	M1,E2
441.4	3	50	3444.9	23/2 <sup>-</sup>	3003.5	21/2 <sup>-</sup>	M1,E2 <sup>#</sup>
443.3	3	54	2960.3	19/2 <sup>-</sup>	2516.9	15/2 <sup>-</sup>	E2
454.1	3	5	6885.7	37/2 <sup>+</sup>	6431.9	35/2 <sup>+</sup>	M1,E2
461.3	3	<2	5794.1	(33/2) <sup>-</sup>	5333.1	(31/2) <sup>-</sup>	(M1,E2)
483.3	3	5	5034.2	27/2 <sup>-</sup>	4550.7	23/2 <sup>-</sup>	E2
540.4	3	10	3543.9	(21/2) <sup>-</sup>	3003.5	21/2 <sup>-</sup>	(M1,E2)
576.4	3	13	1300.20	11/2 <sup>-</sup>	723.78	7/2 <sup>+</sup>	M2 <sup>#</sup>
581.5	3	52	3541.6	23/2 <sup>-</sup>	2960.3	19/2 <sup>-</sup>	E2
597.8	3	12	5632.0	31/2 <sup>-</sup>	5034.2	27/2 <sup>-</sup>	E2
602.6	3	4	1326.80	9/2 <sup>+</sup>	723.78	7/2 <sup>+</sup>	(M1,E2)
623.4	3	7	4282.4		3659.0	25/2 <sup>+</sup>	
656.8	3	16	1380.34	9/2 <sup>+</sup>	723.78	7/2 <sup>+</sup>	M1,E2 <sup>#</sup>
685.5	3	8	4344.5		3659.0	25/2 <sup>+</sup>	(M1,E2)
699.5	3	<2	4490.7	(27/2) <sup>-</sup>	3791.2	(23/2) <sup>-</sup>	(E2)
702.1	@ 3	7	2457.0	15/2 <sup>+</sup>	1754.6	11/2 <sup>+</sup>	E2 <sup>#</sup>
702.2	3		4984.6		4282.4		
712.2	3	8	2092.2	13/2 <sup>+</sup>	1380.34	9/2 <sup>+</sup>	E2 <sup>#</sup>
716.4	3	14	6348.4	35/2 <sup>-</sup>	5632.0	31/2 <sup>-</sup>	E2
720.3	3	31	4261.9	27/2 <sup>-</sup>	3541.6	23/2 <sup>-</sup>	E2
723.6	3	28	723.78	7/2 <sup>+</sup>	0.0	5/2 <sup>+</sup>	M1,E2
734.4	3	5	5244.4	29/2 <sup>+</sup>	4510.1	25/2 <sup>+</sup>	(E2)
745.8	3	15	2837.7	17/2 <sup>+</sup>	2092.2	13/2 <sup>+</sup>	E2
750.2	3	7	5634.9	31/2 <sup>+</sup>	4884.7	27/2 <sup>+</sup>	(E2)
765.5	3	14	4884.7	27/2 <sup>+</sup>	4119.4	23/2 <sup>+</sup>	(E2)
784.8	3	4	6029.2	33/2 <sup>+</sup>	5244.4	29/2 <sup>+</sup>	(E2)
788.6	3	<2	4899.4	(29/2) <sup>-</sup>	4110.5	(25/2) <sup>-</sup>	(E2)
797.8	@ 3	15	3254.8	19/2 <sup>+</sup>	2457.0	15/2 <sup>+</sup>	E2
797.8	@ 3	15	6431.9	35/2 <sup>+</sup>	5634.9	31/2 <sup>+</sup>	(E2)
818.1	3	11	4510.1	25/2 <sup>+</sup>	3692.0	21/2 <sup>+</sup>	(E2)
823.3	3	6	7171.7	39/2 <sup>-</sup>	6348.4	35/2 <sup>-</sup>	E2

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**(HI,xn $\gamma$ ) 1996Ch36,1995Mo24 (continued)** $\gamma(^{115}\text{Sb})$  (continued)

$E_\gamma$ <sup>†</sup>	$I_\gamma$ <sup>†</sup>	$E_i$ (level)	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. <sup>‡</sup>	Comments
843.5 3	<2	5333.1	(31/2 <sup>-</sup> )	4490.7	(27/2 <sup>-</sup> )	(E2)	
846.9 3	23	5108.8	31/2 <sup>-</sup>	4261.9	27/2 <sup>-</sup>	(E2)	
854.5 3	11	3692.0	21/2 <sup>+</sup>	2837.7	17/2 <sup>+</sup>	E2	Mult.: DCO=0.82 27.
856.1 3	<2	6885.7	37/2 <sup>+</sup>	6029.2	33/2 <sup>+</sup>		
864.6 3	10	4119.4	23/2 <sup>+</sup>	3254.8	19/2 <sup>+</sup>	(E2)	
887.4 3	8	5149.3	31/2 <sup>-</sup>	4261.9	27/2 <sup>-</sup>	(E2)	Mult.: DCO=0.82 27.
890.4 3	<2	5794.1	(33/2 <sup>-</sup> )	4899.4	(29/2 <sup>-</sup> )	(E2)	
932.2 3	3	8103.9	43/2 <sup>-</sup>	7171.7	39/2 <sup>-</sup>	E2	Mult.: DCO=1.01 2.
959.6 3	11	6068.4	35/2 <sup>-</sup>	5108.8	31/2 <sup>-</sup>	E2	Mult.: DCO=0.98 2.
<sup>x</sup> 971.2 3	3						
971.2 3		5703.5		4732.3			
986.6 3	5	5330		4344.5			
1015.6 3	20	2315.9	13/2 <sup>-</sup>	1300.20	11/2 <sup>-</sup>	M1,E2 <sup>#</sup>	
1046.6 3	<3	9150.5	47/2 <sup>-</sup>	8103.9	43/2 <sup>-</sup>	(E2)	
<sup>x</sup> 1051.4 3							
1051.6 @ 3	14 @	5783.9		4732.3			
1051.6 3	5	7120.0	39/2 <sup>-</sup>	6068.4	35/2 <sup>-</sup>	E2	Mult.: DCO=1.00 2.
1073.3 3	23	4732.3		3659.0	25/2 <sup>+</sup>		
1098.5 3	3	1098.6	7/2 <sup>+</sup>	0.0	5/2 <sup>+</sup>	M1,E2 <sup>#</sup>	
1136 1	<2	8256.0	43/2 <sup>-</sup>	7120.0	39/2 <sup>-</sup>	(E2)	
1154.8 5	<2	10305.3	51/2 <sup>-</sup>	9150.5	47/2 <sup>-</sup>	(E2)	
1216.7 3	100	2516.9	15/2 <sup>-</sup>	1300.20	11/2 <sup>-</sup>	E2 <sup>#</sup>	Mult.: DCO=1.04 8.
1300.2 3	211	1300.20	11/2 <sup>-</sup>	0.0	5/2 <sup>+</sup>	E3 <sup>#</sup>	
1326.8 3	15	1326.80	9/2 <sup>+</sup>	0.0	5/2 <sup>+</sup>	E2 <sup>#</sup>	
1338.2 3	17	2638.3	15/2 <sup>-</sup>	1300.20	11/2 <sup>-</sup>	E2 <sup>#</sup>	
1380.5 3	29	1380.34	9/2 <sup>+</sup>	0.0	5/2 <sup>+</sup>	E2 <sup>#</sup>	
1492.8 3	8	5034.2	27/2 <sup>-</sup>	3541.6	23/2 <sup>-</sup>	E2	Mult.: DCO=0.9 2.
1590.1 3	<2	4550.7	23/2 <sup>-</sup>	2960.3	19/2 <sup>-</sup>	(E2)	
1754.8 5	4	4550.7	23/2 <sup>-</sup>	2796.1	19/2 <sup>-</sup>	(E2)	

<sup>†</sup> From 1996Ch36. The uncertainties in intensities are less than 5%.

<sup>‡</sup> From DCO ratios (1996Ch36).R $\approx$ 1.0 for stretched Q and R $\approx$ 0.5 for stretched d. Many multiplicities are given in 1996Ch36 without DCO data. Authors have assumed them from band assignment. Evaluator has added parenthesis to those which seem estimated.

<sup>#</sup> From previous works: ( $\alpha$ ,2n $\gamma$ ) and/or decay.

@ Multiply placed with undivided intensity.

<sup>x</sup>  $\gamma$  ray not placed in level scheme.

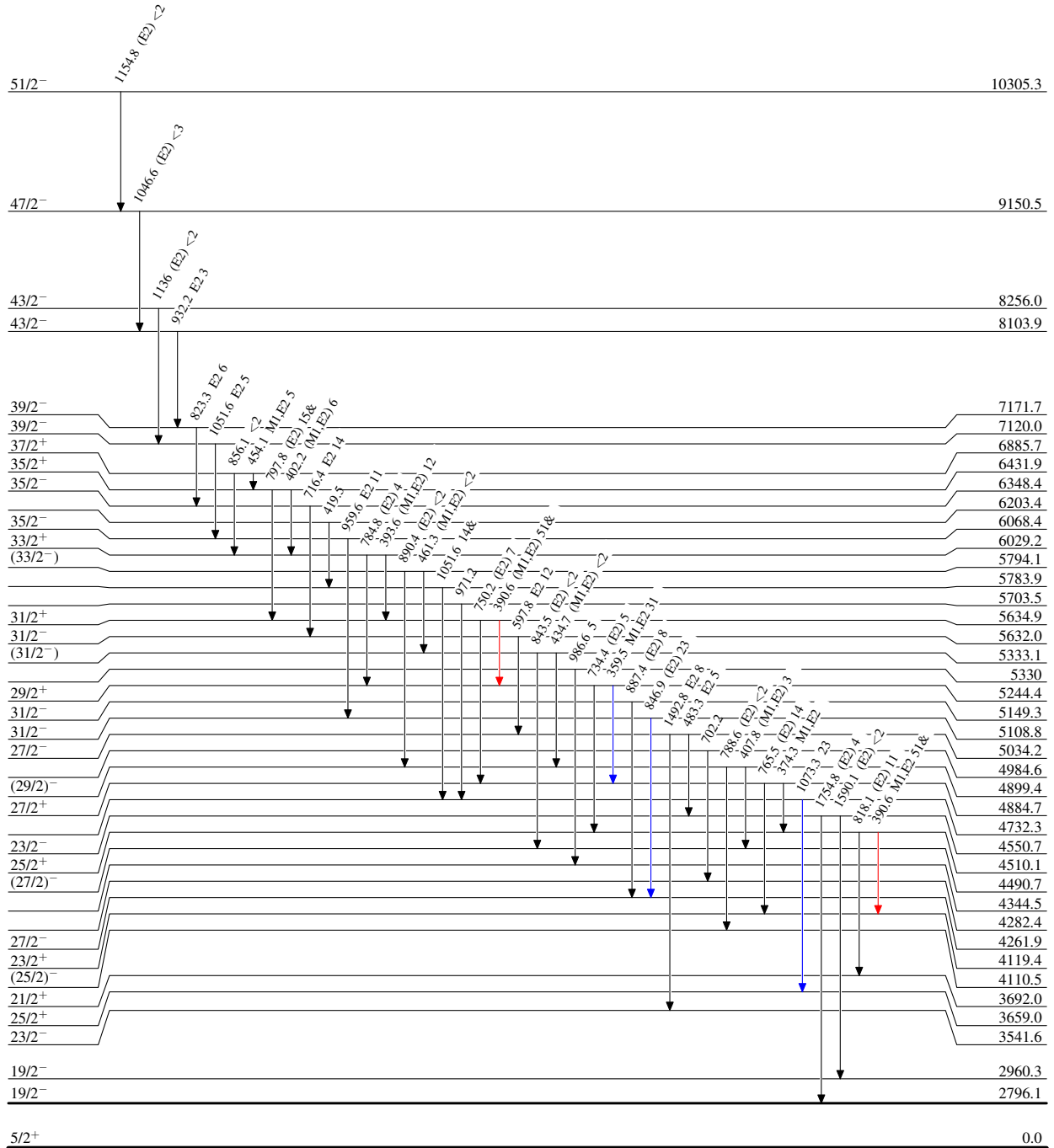
(HI,xn $\gamma$ ) 1996Ch36,1995Mo24

Level Scheme

Legend

Intensities: Type not specified  
& Multiply placed: undivided intensity given

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



<sup>115</sup>Sb<sub>64</sub>

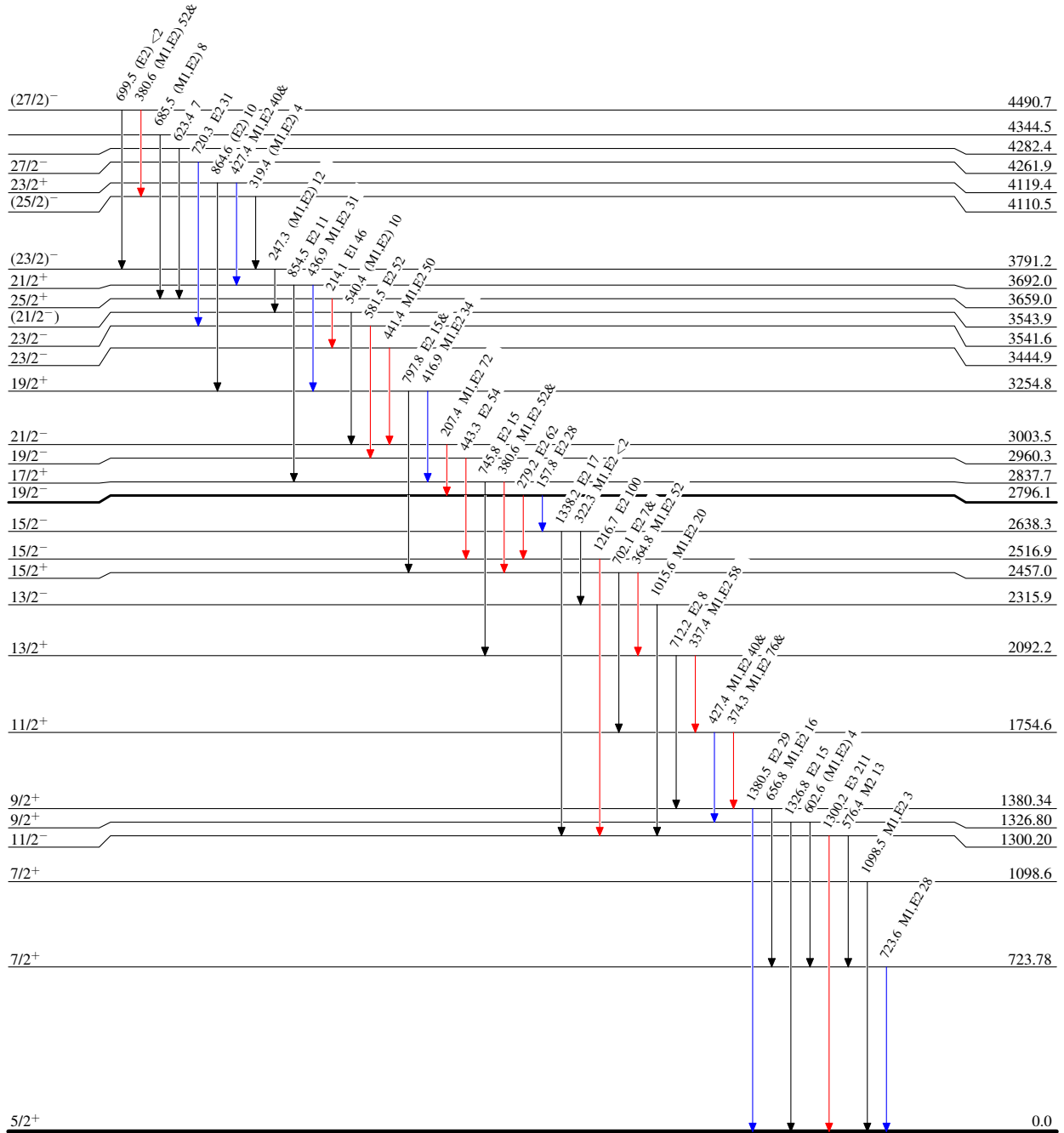
(HI,xn $\gamma$ ) 1996Ch36,1995Mo24

Level Scheme (continued)

Intensities: Type not specified  
& Multiply placed: undivided intensity given

Legend

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



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**(HI,xn $\gamma$ ) 1996Ch36,1995Mo24**