

**(HI,xnγ) 1991Ca30,1978NoZW,1977No01**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Wang Jimin and Huang Xiaolong		NDS 144, 1 (2017)	1-Mar-2016

2005Ma81: <sup>40</sup>Ca(<sup>14</sup>N,n2pγ), E not given. Measured E<sub>γ</sub>, I<sub>γ</sub>, γγ-coin, and lifetime using an advanced time delayed method.  
 1991Ca30: <sup>40</sup>Ca(<sup>14</sup>N,2pnγ) E=40 MeV, <sup>27</sup>Al(<sup>27</sup>Al,p2nγ) E=90 MeV, measured E<sub>γ</sub>, I<sub>γ</sub>, γγ-coin, γ(θ), and DSA.  
 1978Fo09: <sup>40</sup>Ca(<sup>14</sup>N,2pnγ) E=10-110 MeV, measured E<sub>γ</sub>, I<sub>γ</sub>, γ(θ), and δ.  
 1978NoZW: <sup>40</sup>Ca(<sup>14</sup>N,2pnγ) E=30-45 MeV, measured E<sub>γ</sub>, I<sub>γ</sub>, γγ-coin, nγ-coin.  
 1977No01: <sup>40</sup>Ca(<sup>14</sup>N,n2pγ), E=36 MeV; also studied <sup>39</sup>K(<sup>14</sup>N,pnγ), E=36 MeV. Measured E<sub>γ</sub>, I<sub>γ</sub>, γ(θ), γγ coin and DSA.  
 1974Br04: <sup>40</sup>Ca(<sup>16</sup>O,pαγ), E=47 MeV, measured recoil distance.  
 All data from 1977No01, except as noted. Evaluators' note: ΔE for γ-ray energies in 1977No01 not given by authors.

<sup>51</sup>Mn Levels

E(level) <sup>†</sup>	J <sup>π</sup> #	T <sub>1/2</sub> &	Comments
0.0 <sup>@</sup>	5/2 <sup>-</sup>		
237.37 <sup>@ 15</sup>	7/2 <sup>-</sup>	14.1 <sup>b</sup> ps 23	
1139.5 <sup>@ 2</sup>	9/2 <sup>-</sup>		
1488.2 <sup>@ 2</sup>	11/2 <sup>-</sup>		
2956.7 <sup>@ 3</sup>	(13/2 <sup>-</sup> )		
3250.0 <sup>@ 4</sup>	(15/2 <sup>-</sup> )		
3679.7 <sup>@ 5</sup>	(17/2 <sup>-</sup> )	1.76 ns 4	T <sub>1/2</sub> : From γγγ(t) in 2005Ma81. Other: 1.52 ns 21 from DSA in 1978NoZW.
4138.8 <sup>@ 5</sup>	(19/2 <sup>-</sup> )	<0.7 ps	
5639 <sup>‡@</sup>	(21/2 <sup>-</sup> )		
6469 <sup>‡@</sup>	(23/2 <sup>-</sup> )		
7174 <sup>‡@</sup>	(27/2 <sup>-</sup> )	90.1 <sup>a</sup> ps 17	

<sup>†</sup> From 1977No01 based on a least-squares fit to the previously measured γ-ray energies, except as noted.

<sup>‡</sup> From 1978NoZW.

# Based on γ(θ) measurement, γ mult, and band analysis.

@ Band(A): yrast band. Members: 5/2<sup>-</sup> to (27/2<sup>-</sup>).

& From DSA (1977No01), except as noted.

<sup>a</sup> From DSA (1978NoZW).

<sup>b</sup> From RDM (1974Br04).

γ(<sup>51</sup>Mn)

E <sub>γ</sub>	I <sub>γ</sub> <sup>‡</sup>	E <sub>i</sub> (level)	J <sub>i</sub> <sup>π</sup>	E <sub>f</sub>	J <sub>f</sub> <sup>π</sup>	Mult. <sup>†</sup>	Comments
237.4	581 50	237.37	7/2 <sup>-</sup>	0.0	5/2 <sup>-</sup>	D+Q	γ(θ): A <sub>2</sub> =-0.11 6, A <sub>4</sub> =+0.05 8 (1977No01); A <sub>2</sub> =-0.01 3, A <sub>4</sub> =0.01 3, δ=0.17 5 (1978Fo09). E <sub>γ</sub> ,I <sub>γ</sub> : Other: E <sub>γ</sub> =238.0 5, I <sub>γ</sub> =137 7 (1978Fo09).
293.3 <sup>#</sup>	14 6	3250.0	(15/2 <sup>-</sup> )	2956.7	(13/2 <sup>-</sup> )		E <sub>γ</sub> ,I <sub>γ</sub> : Other: E <sub>γ</sub> =293.7 5, I <sub>γ</sub> <22 (1978Fo09).
348.7	111 10	1488.2	11/2 <sup>-</sup>	1139.5	9/2 <sup>-</sup>	D+Q	γ(θ): A <sub>2</sub> =-0.29 5, A <sub>4</sub> =-0.04 8 (1977No01); A <sub>2</sub> =-0.07 4, A <sub>4</sub> =-0.11 4, δ=0.00 8 (1978Fo09).
429.7	55 15	3679.7	(17/2 <sup>-</sup> )	3250.0	(15/2 <sup>-</sup> )	M1	E <sub>γ</sub> ,I <sub>γ</sub> : Other: E <sub>γ</sub> =349.0 5, I <sub>γ</sub> =85 7 (1978Fo09). γ(θ): A <sub>2</sub> =-0.41 5, A <sub>4</sub> =0.0 8 (1977No01);
459.0	100	4138.8	(19/2 <sup>-</sup> )	3679.7	(17/2 <sup>-</sup> )	D+Q	E <sub>γ</sub> ,I <sub>γ</sub> : Other: E <sub>γ</sub> =429.0 5, I <sub>γ</sub> <103 (1978Fo09). γ(θ): A <sub>2</sub> =-0.23 10, A <sub>4</sub> =+0.02 14 (1977No01); A <sub>2</sub> =0.29 4, A <sub>4</sub> =-0.10 4, δ=-0.05 5 (1978Fo09). E <sub>γ</sub> ,I <sub>γ</sub> : Other: E <sub>γ</sub> =458.5 5, I <sub>γ</sub> =100 (1978Fo09).

Continued on next page (footnotes at end of table)

**(HI,xn $\gamma$ ) 1991Ca30,1978NoZW,1977No01 (continued)** $\gamma(^{51}\text{Mn})$  (continued)

$E_\gamma$	$I_\gamma^\ddagger$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. <sup>†</sup>	Comments
703.6 5	48 4	7174	(27/2 <sup>-</sup> )	6469	(23/2 <sup>-</sup> )	E2	$E_\gamma, I_\gamma$ : From 1978Fo09. Other: $E_\gamma=705$ (1978NoZW). $\gamma(\theta)$ : $A_2=0.47$ 8, $A_4=-0.11$ 10 (1978Fo09).
723.0	100 15	3679.7	(17/2 <sup>-</sup> )	2956.7	(13/2 <sup>-</sup> )	E2	Multi.: from Adopted Gammas. $\gamma(\theta)$ : $A_2=+0.38$ 6, $A_4=-0.07$ 9 (1977No01); $A_2=0.36$ 5, $A_4=-0.10$ 6 (1978Fo09).
830.7 5	42 4	6469	(23/2 <sup>-</sup> )	5639	(21/2 <sup>-</sup> )	D+Q	$E_\gamma, I_\gamma$ : Other: $E_\gamma=722.2$ 5, $I_\gamma=82$ 6 (1978Fo09).
902.1	236 50	1139.5	9/2 <sup>-</sup>	237.37	7/2 <sup>-</sup>	D+Q	$E_\gamma, I_\gamma$ : From 1978Fo09. Other: $E_\gamma=830$ (1978NoZW). $\gamma(\theta)$ : $A_2=-0.47$ 10, $A_4=-0.00$ 12, $\delta=-0.12$ 4 (1978Fo09).
1139.5	32 7	1139.5	9/2 <sup>-</sup>	0.0	5/2 <sup>-</sup>	Q	$\gamma(\theta)$ : $A_2=+0.17$ 11, $A_4=-0.11$ 15 (1977No01); $A_2=0.06$ 6, $A_4=0.10$ 8 (1978Fo09).
1250.8	220 50	1488.2	11/2 <sup>-</sup>	237.37	7/2 <sup>-</sup>	Q	$E_\gamma, I_\gamma$ : Other: $E_\gamma=901.5$ 5, $I_\gamma=79$ 6 (1978Fo09). $\gamma(\theta)$ : $A_2=+0.60$ 29, $A_4=+0.10$ 41 (1977No01).
1468.5	61 6	2956.7	(13/2 <sup>-</sup> )	1488.2	11/2 <sup>-</sup>	D+Q	$E_\gamma, I_\gamma$ : Other: $E_\gamma=1139.3$ 5, $I_\gamma=16$ 5 (1978Fo09). $\gamma(\theta)$ : $A_2=+0.23$ 13, $A_4=-0.30$ 18 (1977No01); $A_2=0.21$ 7, $A_4=0.01$ 9 (1978Fo09).
1499.3 5	55 5	5639	(21/2 <sup>-</sup> )	4138.8	(19/2 <sup>-</sup> )	D+Q	$E_\gamma, I_\gamma$ : Other: $E_\gamma=1249.9$ 5, $I_\gamma=106$ 8 (1978Fo09). $\gamma(\theta)$ : $A_2=+0.47$ 17, $A_4=-0.12$ 25 (1977No01); $A_2=0.20$ 8, $A_4=0.08$ 10 (1978Fo09).
1761.8	86 13	3250.0	(15/2 <sup>-</sup> )	1488.2	11/2 <sup>-</sup>	Q	$E_\gamma, I_\gamma$ : Other: $E_\gamma=1467.8$ 5, $I_\gamma=95$ 8 (1978Fo09). $E_\gamma, I_\gamma$ : From 1978Fo09. Other: $E_\gamma=1500$ (1978NoZW).
1817.2	52 15	2956.7	(13/2 <sup>-</sup> )	1139.5	9/2 <sup>-</sup>	Q	$\gamma(\theta)$ : $A_2=-0.61$ 12, $A_4=-0.07$ 14, $\delta=-0.23$ 6 (1978Fo09). $\gamma(\theta)$ : $A_2=+0.45$ 15, $A_4=-0.10$ 22 (1977No01); $A_2=0.30$ 12, $A_4=-0.10$ 15 (1978Fo09).
2330.0 5	12 3	6469	(23/2 <sup>-</sup> )	4138.8	(19/2 <sup>-</sup> )		$E_\gamma, I_\gamma$ : Other: $E_\gamma=1762.3$ 5, $I_\gamma=53$ 5 (1978Fo09). $\gamma(\theta)$ : $A_2=+0.23$ 26, $A_4=-0.22$ 38 (1977No01); $A_2=0.23$ 11, $A_4=-0.16$ 13 (1978Fo09).
							$E_\gamma, I_\gamma$ : Other: $E_\gamma=1817.7$ 5, $I_\gamma=62$ 5 (1978Fo09). $E_\gamma, I_\gamma$ : From 1978Fo09. Other: $E_\gamma=2300$ (1991Ca30).

<sup>†</sup> From 1978NoZW based on  $\gamma(\theta)$  measurement.

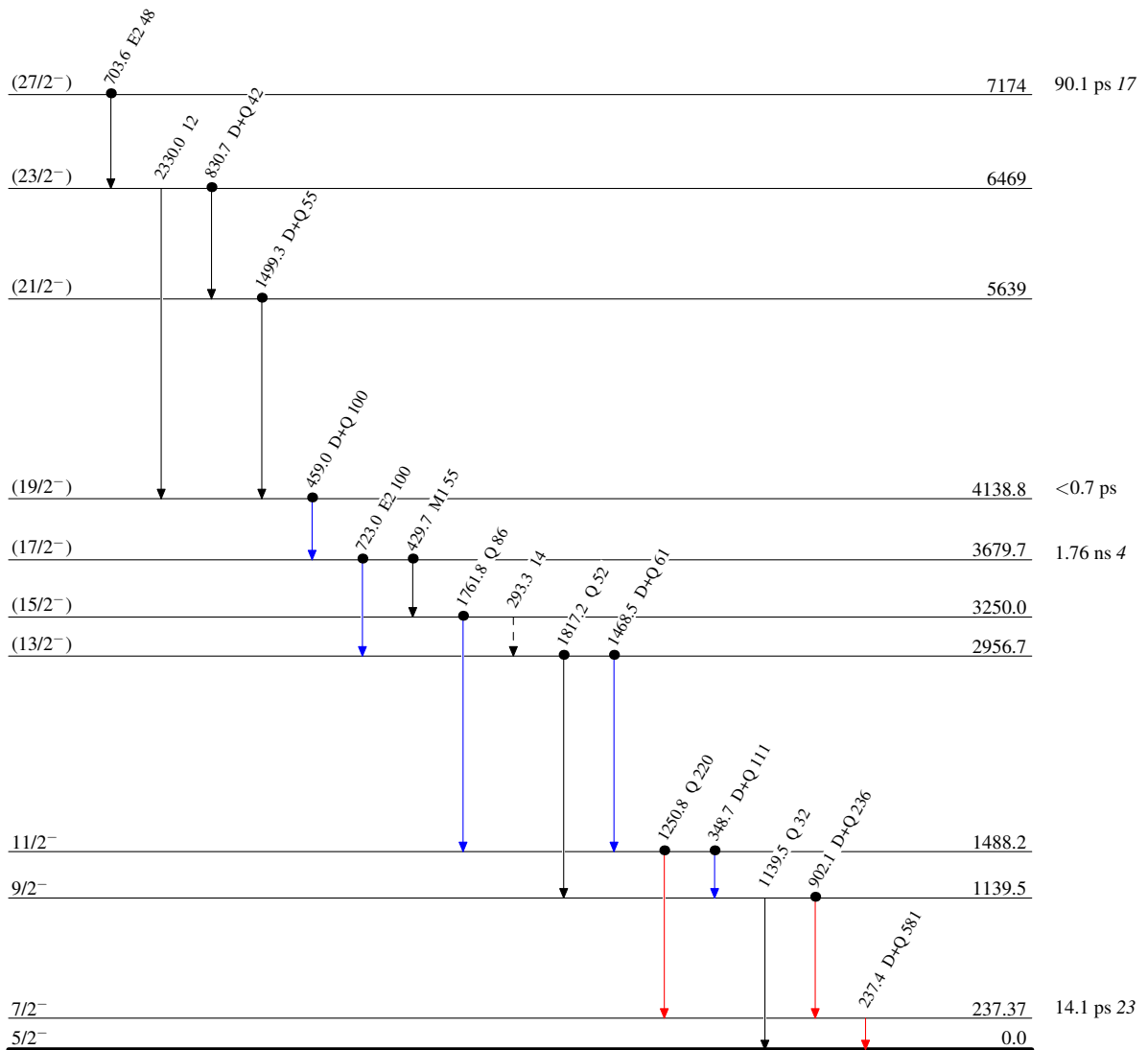
<sup>‡</sup> Relative photon intensity renormalized to  $I(459\gamma)=100$ .

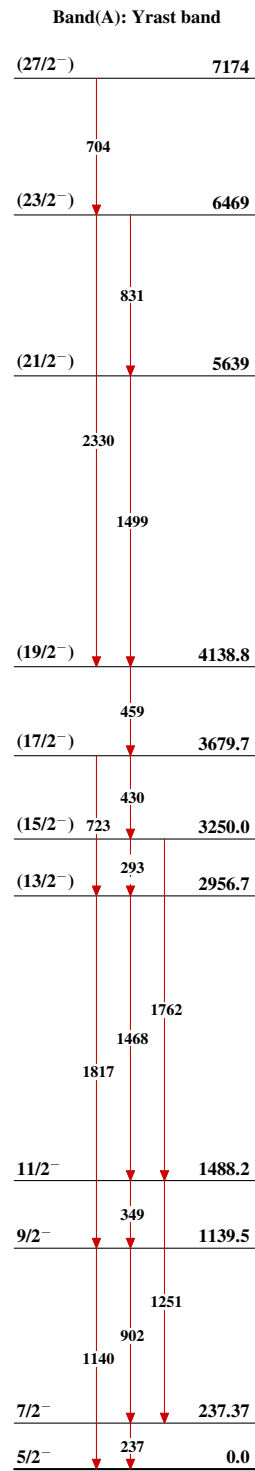
<sup>#</sup> Placement of transition in the level scheme is uncertain.

**(HI,xn $\gamma$ ) 1991Ca30,1978NoZW,1977No01****Level Scheme**Intensities: Relative  $I_\gamma$ 

## Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- - -  $\gamma$  Decay (Uncertain)
- Coincidence

 $^{51}_{25}\text{Mn}_{26}$

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