

(HI,xn γ) [1978Wa09,1974Po14,2000ApZX](#)

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Huo Junde	NDS 110,2689 (2009)	31-Mar-2007

[1984Ko31](#): $^7\text{Li}(^{51}\text{V},\alpha n\gamma)$, E=180 MeV, γ , $\gamma\gamma$, $\alpha\gamma$ -coin.

[1978Wa09](#): $^{48}\text{Ca}(^9\text{Be},4n\gamma)$, E=25-45 MeV, γ , $\gamma\gamma$, $\gamma(\theta)$ DSAM.

[2000ApZX](#): $^{48}\text{Ca}(^9\text{Be},4n\gamma)$, E=50 MeV, E γ , I γ , and $\gamma\gamma$, and $\gamma\gamma(\theta)$ (DCO) using 8 π spectrometer.

[1974Po14](#): $^{51}\text{V}(^7\text{Li},\alpha n\gamma)$, E=25 MeV, γ , $\gamma\gamma$, $\gamma(\theta)$ RDM, DSAM.

 ^{53}Cr Levels

E(level) [†]	J π [‡]	T _{1/2} [#]	Comments
0.0	3/2 ⁻		
1006.51 8	5/2 ⁻		
1289.63 8	7/2 ⁻		
1536.72 8	7/2 ⁻		
2172.44 14	11/2 ⁻	33 [@] ps 10	
2233.27 15	9/2 ⁻	0.37 ps 6	T _{1/2} : other: 0.3 ps +3-1 (1974Po14).
2705.98 17	11/2 ⁻		
2826.60 18	11/2 ⁻	0.07 ps 4	T _{1/2} : other: <0.7 ps (1974Po14).
3084.22 17	15/2 ⁻	30 ps 10	T _{1/2} : from 1974Po14 . Other: >1.3 ps (1978Wa09).
3243.68 18	13/2	0.17 ps 4	
3592.3 5	13/2 ⁻	<0.07 ps	
4236.5 8	(17/2 ⁻)		
4346.8 8	(17/2 ⁺)		
4349.7 5	15/2	<0.07 ps	
4697.03 21	19/2 ⁻	0.22 ps 6	T _{1/2} : other: >0.6 ps, RDM (1974Po14).
5001.5 6	17/2 ⁻	>0.6 ps	
5259.0 10	(21/2 ⁺)		
5539.3 8	(21/2 ⁻)		
6009.1 9	21/2 ⁽⁻⁾		
6928.0 9	23/2 ⁽⁻⁾		
7567.0 8	(21/2 ⁻)		
7613.8 12	25/2 ⁽⁻⁾		
7695.4 15			
9298.9 11	(23/2 ⁻)		
9458.1 17	(25/2 ⁻)		
10110.9 13	(27/2 ⁻)		
11291.3 18	(25/2 ⁻)		

[†] From a least-squares fit to the γ -ray data.

[‡] Adopted values.

[#] From [1978Wa09](#), DSAM, except as noted.

[@] From [1974Po14](#), RDM.

 $\gamma(^{53}\text{Cr})$

E γ [†]	I γ ^{#a}	E _i (level)	J π _i	E _f	J π _f	Mult. [@]
158.6 [‡] 10	10 [‡] 2	3243.68	13/2	3084.22	15/2 ⁻	
247.08 11	26 2	1536.72	7/2 ⁻	1289.63	7/2 ⁻	Q+D ^{&}
283.14 11	6 1	1289.63	7/2 ⁻	1006.51	5/2 ⁻	D ^{&}
346.7 ^{‡b} 15	0.2 [‡] 1	4697.03	19/2 ⁻	4349.7	15/2	

Continued on next page (footnotes at end of table)

(HL,xn γ) **1978Wa09,1974Po14,2000ApZX** (continued) $\gamma(^{53}\text{Cr})$ (continued)

$E_\gamma^\dagger$	$I_\gamma^{#a}$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [@]	Comments
377.97 26	0.7 3	3084.22	15/2 ⁻	2705.98	11/2 ⁻	D,E2	
530.18 11	65 2	1536.72	7/2 ⁻	1006.51	5/2 ⁻	D&	
533.49 11	100	2705.98	11/2 ⁻	2172.44	11/2 ⁻		
593.33 10	≥ 93	2826.60	11/2 ⁻	2233.27	9/2 ⁻	M1	
651.0 ^{‡b} 6	10 [‡] 1	5001.5	17/2 ⁻	4349.7	15/2		
696.54 13	100	2233.27	9/2 ⁻	1536.72	7/2 ⁻	D&	
757.35 16	100	4349.7	15/2	3592.3	13/2 ⁻	M1	
765.73 41	100	3592.3	13/2 ⁻	2826.60	11/2 ⁻	M1	
767.4 [‡] 12	100 [‡] 7	7695.4		6928.0	23/2 ⁽⁻⁾		
842.3 [‡] 7	100 [‡] 5	5539.3	(21/2 ⁻)	4697.03	19/2 ⁻		
882.80 11	100	2172.44	11/2 ⁻	1289.63	7/2 ⁻	D,E2	
911.81 11	99.3 3	3084.22	15/2 ⁻	2172.44	11/2 ⁻	D,E2	
912.2 [‡] 6	100 [‡] 8	5259.0	(21/2 ⁺)	4346.8	(17/2 ⁺)		
992.8 [‡] 7	100 [‡] 12	4236.5	(17/2 ⁻)	3243.68	13/2		
1006.49 11	100	1006.51	5/2 ⁻	0.0	3/2 ⁻		
1007.6 [‡] 6	100 [‡] 6	6009.1	21/2 ⁽⁻⁾	5001.5	17/2 ⁻	Q	DCO=0.83 24.
1071.24 11	90 [‡] 5	3243.68	13/2	2172.44	11/2 ⁻	D,E2	
1103.1 [‡] 7	100 [‡] 5	4346.8	(17/2 ⁺)	3243.68	13/2	Q	DCO=0.78 18.
1289.59 11	94 1	1289.63	7/2 ⁻	0.0	3/2 ⁻	Q&	
1289.88	≤ 7	2826.60	11/2 ⁻	1536.72	7/2 ⁻		From 1978Wa09. It was not observed. E_γ was calculated from level energies separation by the authors.
1536.73 10	9 2	1536.72	7/2 ⁻	0.0	3/2 ⁻	Q&	
1604.7 [‡] 8	100 [‡] 18	7613.8	25/2 ⁽⁻⁾	6009.1	21/2 ⁽⁻⁾	D	DCO=0.58 30.
1605.0 ^{‡b} 15	5 [‡] 2	9298.9	(23/2 ⁻)	7695.4			
1612.78 12	99.8 [‡] 31	4697.03	19/2 ⁻	3084.22	15/2 ⁻	D,E2	
1731.9 [‡] 7	95 [‡] 4	9298.9	(23/2 ⁻)	7567.0	(21/2 ⁻)	Q	DCO=0.94 26.
1759.2 ^{‡b} 7	19 [‡] 2	5001.5	17/2 ⁻	3243.68	13/2		
1917.23 53	70 [‡] 4	5001.5	17/2 ⁻	3084.22	15/2 ⁻	D,E2	
1992.3 [‡] 15	100 [‡] 9	11291.3	(25/2 ⁻)	9298.9	(23/2 ⁻)		
2230.9 [‡] 8	100 [‡] 7	6928.0	23/2 ⁽⁻⁾	4697.03	19/2 ⁻	Q	DCO=1.5 8.
2414.1 ^{‡b} 12	42 [‡] 3	10110.9	(27/2 ⁻)	7695.4			
2869.9 [‡] 7	100 [‡] 5	7567.0	(21/2 ⁻)	4697.03	19/2 ⁻		
3182.8 [‡] 10	58 [‡] 4	10110.9	(27/2 ⁻)	6928.0	23/2 ⁽⁻⁾		
3918.0 ^{‡b} 13	100 [‡] 10	9458.1	(25/2 ⁻)	5539.3	(21/2 ⁻)		

[†] From 1978Wa09, except as noted.[‡] From 2000ApZX.

Branching ratio for each level, from 1978Wa09, except as noted.

[@] From $\gamma(\theta)$ (1974Po14,1978Wa09) and comparison to RUL, except as noted.& From A₂ and A₄ measured at E=27 MeV, see 1978Wa09.^a % photon branching from each level.^b Placement of transition in the level scheme is uncertain.

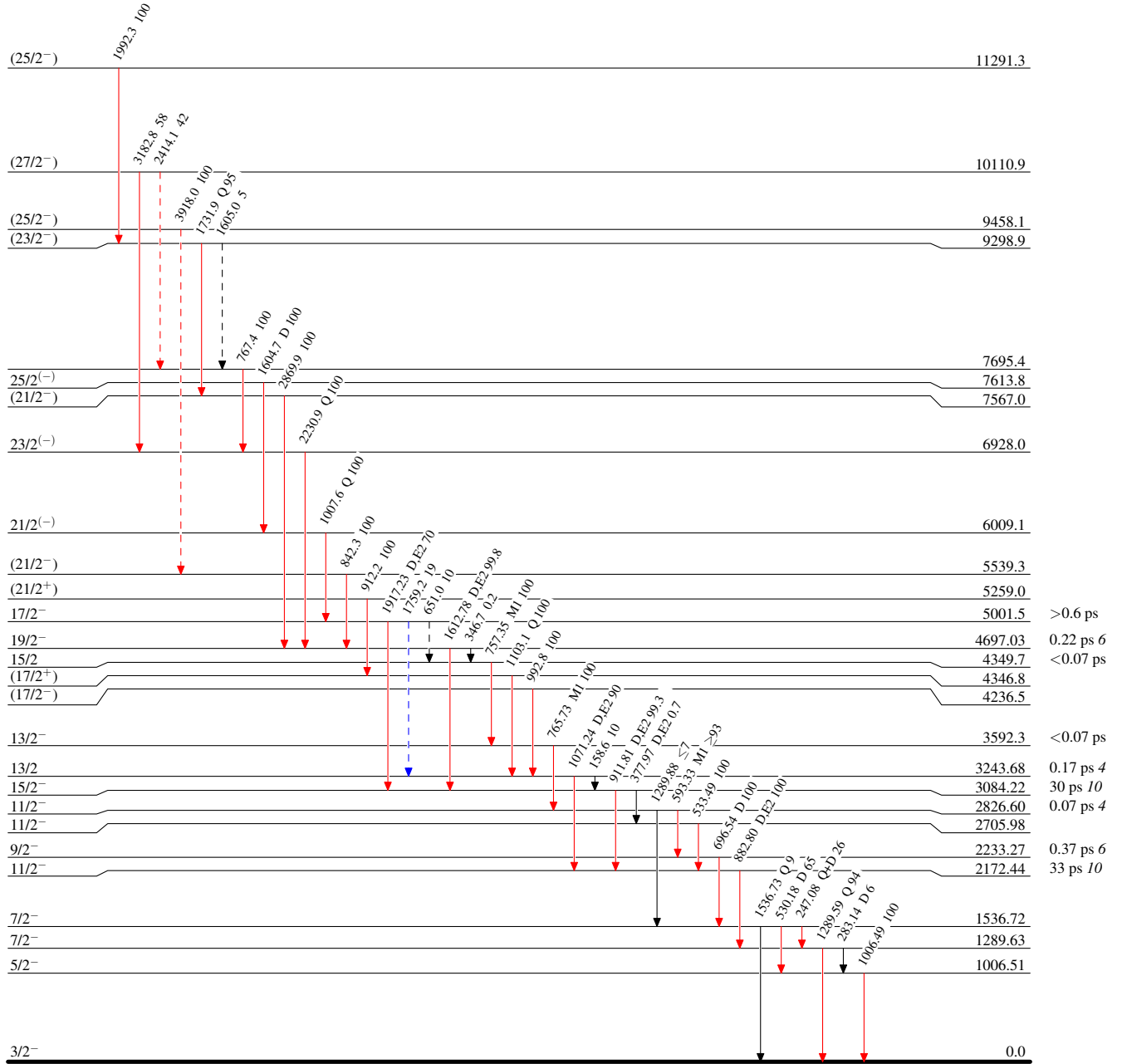
(HI,xn γ) 1978Wa09,1974Po14,2000ApZX

Legend

Level Scheme

Intensities: Relative I_γ

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

 $^{53}_{24}\text{Cr}_{29}$