

¹³⁶Xe(¹³C,4nγ) **1986Ha28,1996Ur01**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli		NDS 110, 507 (2009)	1-Oct-2008

Additional information 1.

E=49-60 MeV, Measured Eγ, Iγ, γ(θ) (1986Ha28).

Measured: γ, γγ coin, γ(θ), γ(t), yield (1986Ha28); γ, γγ coin, DCO (1990UrZZ).

E=55 MeV, Measured Eγ, Iγ, γγ coin using four Compton-suppressed Ge detectors (1996Ur01).

¹⁴⁵Nd Levels

E(level) [†] #	Jπ [‡]	E(level) [†] #	Jπ [‡]	E(level) [†] #	Jπ [‡]	E(level) [†] #	Jπ [‡]
0.0 ^{&}	7/2 ⁻	1715.3 6	15/2 ⁽⁺⁾	3030.4 6	23/2 ⁽⁺⁾	4200.3 [@] 10	(31/2 ⁺)
72.5 ^a 4	5/2 ⁻	2011.7 ^a 6	17/2 ⁻	3137.1 7	23/2 ⁽⁺⁾	4474.5 [@] 10	
657.7 ^{&} 4	11/2 ⁻	2070.7 [@] 6	17/2 ⁻	3270.4 ^b 7	25/2 ⁺	4567.8 9	31/2 ⁽⁺⁾
748.3 ^a 4	9/2 ⁻	2347.5 6	19/2 ⁽⁻⁾	3349.6 7	23/2,21/2 ⁺	4585.5 [@] 11	(33/2)
1010.9 5	11/2 ⁽⁺⁾	2408.1 ^{&} 6	19/2 ⁽⁻⁾	3517.3 7	27/2 ⁽⁺⁾	4730.4 [@] 11	
1111.1 ^b 5	13/2 ⁺	2421.0 ^b 6	21/2 ⁺	3599.3 [@] 8	(27/2 ⁺)	4847.2 10	33/2
1401.2 ^{&} 5	15/2 ⁻	2534.2 ^a 6	21/2 ⁻	3757.8 [@] 8	(25/2,27/2)	5512.1 12	(35/2)
1427.6 ^a 5	13/2 ⁻	2543.4 8	9/2 ⁽⁺⁾	3961.5 9	29/2 ⁺	6081.0 13	
1709.8 ^b 5	17/2 ⁺	2866.7 6	21/2 ⁻	4082.0 8	27/2,29/2		

[†] If ΔEγ not given, ±0.50 keV assumed for least-squares fitting.

[‡] Adopted values.

Deduced by evaluator from least-squares fit to γ-ray energies using ΔE=0.5 keV for all γ rays.

@ From 1990UrZZ, 1996Ur01.

& Band(A): K^π=7/2⁻ rotational band.

^a Band(B): K^π=5/2⁻ rotational band.

^b Band(C): K^π=13/2⁺ rotational band.

γ(¹⁴⁵Nd)

Eγ	Iγ [‡]	E _i (level)	J _i ^π	E _f	J _f ^π	Mult. [†]	δ	Comments
72.5		72.5	5/2 ⁻	0.0	7/2 ⁻			
90.6		748.3	9/2 ⁻	657.7	11/2 ⁻			
163.5	11	3030.4	23/2 ⁽⁺⁾	2866.7	21/2 ⁻	D+Q	+0.05	Mult.: A ₂ =-0.10 3, A ₄ =-0.01 3.
186.6	2	2534.2	21/2 ⁻	2347.5	19/2 ⁽⁻⁾	D+Q	-0.07	Mult.: A ₂ =-0.29 5, A ₄ =+0.02 7.
246.8		3517.3	27/2 ⁽⁺⁾	3270.4	25/2 ⁺			
255.9		4730.4		4474.5				
262.6	9	1010.9	11/2 ⁽⁺⁾	748.3	9/2 ⁻	D+Q	-0.11	Mult.: A ₂ =-0.21 2, A ₄ =+0.00 2.
276.5 [#]		2347.5	19/2 ⁽⁻⁾	2070.7	17/2 ⁻			
279.4	5	4847.2	33/2	4567.8	31/2 ⁽⁺⁾	D+(Q)	-0.03	Mult.: A ₂ =-0.28 7, A ₄ =+0.05 9.
290.1	5	1401.2	15/2 ⁻	1111.1	13/2 ⁺	D+(Q)	-0.05	Mult.: A ₂ =-0.21 3, A ₄ =+0.02 4.
308.5	19	1709.8	17/2 ⁺	1401.2	15/2 ⁻	D+Q	-0.12	Mult.: A ₂ =-0.29 2, A ₄ =+0.00 2.
314.0 [#]		1715.3	15/2 ⁽⁺⁾	1401.2	15/2 ⁻			
318.8	6	3349.6	23/2,21/2 ⁺	3030.4	23/2 ⁽⁺⁾	D+Q	+0.19	Mult.: A ₂ =+0.06 3, A ₄ =+0.01 3.
324 [#]		4082.0	27/2,29/2	3757.8	(25/2,27/2)			
353.3	5	1010.9	11/2 ⁽⁺⁾	657.7	11/2 ⁻	D+Q	-0.23	Mult.: A ₂ =+0.13 5, A ₄ =-0.01 5.
380.3	12	3517.3	27/2 ⁽⁺⁾	3137.1	23/2 ⁽⁺⁾	E2		Mult.: A ₂ =+0.35 4, A ₄ =-0.13 4.
385.2		4585.5	(33/2)	4200.3	(31/2 ⁺)			

Continued on next page (footnotes at end of table)

$^{136}\text{Xe}(^{13}\text{C},4n\gamma)$ **1986Ha28,1996Ur01** (continued) $\gamma(^{145}\text{Nd})$ (continued)

E_γ	I_γ^\ddagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [†]	δ	Comments
408 [#]		3757.8	(25/2,27/2)	3349.6	23/2,21/2 ⁺			
445.5	≤2	2866.7	21/2 ⁻	2421.0	21/2 ⁺	D+Q		Mult.: $A_2=-0.10$ 5, $A_4=-0.70$ 30.
^x 448.2	1							Mult.: $A_2=+0.15$ 24, $A_4=-0.70$ 30.
453.5	≤30	1111.1	13/2 ⁺	657.7	11/2 ⁻	D		Mult.: $A_2=-0.03$ 1, $A_4=-0.02$ 1.
458.6	3	2866.7	21/2 ⁻	2408.1	19/2 ⁽⁻⁾	D+(Q)	-0.03	Mult.: $A_2=-0.24$ 11, $A_4=+0.04$ 13.
496.1 [#]		3030.4	23/2 ⁽⁺⁾	2534.2	21/2 ⁻			E_γ : 498.4 γ reported by 1986Ha28 is probably a different γ ray.
513 [#]		4474.5		3961.5	29/2 ⁺			
519.2	8	2866.7	21/2 ⁻	2347.5	19/2 ⁽⁻⁾	D+(Q)	+0.07	Mult.: $A_2=-0.10$ 4, $A_4=+0.03$ 5.
522.6	16	2534.2	21/2 ⁻	2011.7	17/2 ⁻	E2		Mult.: $A_2=+0.34$ 2, $A_4=-0.11$ 3.
568.9		3599.3	(27/2 ⁺)	3030.4	23/2 ⁽⁺⁾			
568.9		6081.0		5512.1	(35/2)			
584.1	8	2011.7	17/2 ⁻	1427.6	13/2 ⁻	E2		Mult.: $A_2=+0.23$ 5, $A_4=-0.03$ 6.
598.7	26	1709.8	17/2 ⁺	1111.1	13/2 ⁺	E2		Mult.: $A_2=+0.26$ 2, $A_4=-0.08$ 2.
601 [#]		4200.3	(31/2 ⁺)	3599.3	(27/2 ⁺)			
603.0	13	3137.1	23/2 ⁽⁺⁾	2534.2	21/2 ⁻	D		Mult.: $A_2=-0.21$ 3, $A_4=-0.00$ 3.
609.2		3030.4	23/2 ⁽⁺⁾	2421.0	21/2 ⁺			
610.5	15	2011.7	17/2 ⁻	1401.2	15/2 ⁻	D+Q	-0.11	Mult.: $A_2=-0.28$ 3, $A_4=-0.00$ 3.
^x 632.7								
637.9	4	2347.5	19/2 ⁽⁻⁾	1709.8	17/2 ⁺	D		Mult.: $A_2=-0.25$ 5, $A_4=-0.01$ 6; $\delta=0.0$.
643. [#]		2070.7	17/2 ⁻	1427.6	13/2 ⁻			
657.7	100	657.7	11/2 ⁻	0.0	7/2 ⁻	E2		Mult.: $A_2=+0.26$ 1, $A_4=-0.08$ 1.
664.9	2	5512.1	(35/2)	4847.2	33/2	(D+Q)		Mult.: $A_2=-0.01$ 11, $A_4=-0.11$ 13.
675.7		748.3	9/2 ⁻	72.5	5/2 ⁻			
679.2	5	1427.6	13/2 ⁻	748.3	9/2 ⁻	E2		Mult.: $A_2=+0.34$ 4, $A_4=-0.11$ 5.
691.1		3961.5	29/2 ⁺	3270.4	25/2 ⁺			
698.1 [#]		2408.1	19/2 ⁽⁻⁾	1709.8	17/2 ⁺			
704.4	5	1715.3	15/2 ⁽⁺⁾	1010.9	11/2 ⁽⁺⁾	E2		Mult.: $A_2=+0.20$ 8, $A_4=-0.03$ 10.
711.2	27	2421.0	21/2 ⁺	1709.8	17/2 ⁺	E2		Mult.: $A_2=+0.24$ 2, $A_4=-0.09$ 2.
716.0 [#]		3137.1	23/2 ⁽⁺⁾	2421.0	21/2 ⁺			
732.6	3	4082.0	27/2,29/2	3349.6	23/2,21/2 ⁺	E2		Mult.: $A_2=+0.25$ 5, $A_4=-0.15$ 7.
743.6	47	1401.2	15/2 ⁻	657.7	11/2 ⁻	E2		Mult.: $A_2=+0.26$ 1, $A_4=-0.08$ 1.
748.3	8	748.3	9/2 ⁻	0.0	7/2 ⁻	M1+E2	+1.2	Mult.: $A_2=+0.64$ 5, $A_4=-0.08$ 6.
769.9	7	1427.6	13/2 ⁻	657.7	11/2 ⁻	D		Mult.: $A_2=-0.23$ 3, $A_4=+0.05$ 3; $\delta=0.0$.
796.1 [#]		2866.7	21/2 ⁻	2070.7	17/2 ⁻			
828.1		2543.4	9/2 ⁽⁺⁾	1715.3	15/2 ⁽⁺⁾			
849.3	16	3270.4	25/2 ⁺	2421.0	21/2 ⁺	E2		Mult.: $A_2=+0.27$ 3, $A_4=-0.07$ 3.
929 [#]		3349.6	23/2,21/2 ⁺	2421.0	21/2 ⁺			
946.3	7	2347.5	19/2 ⁽⁻⁾	1401.2	15/2 ⁻	E2		Mult.: $A_2=+0.20$ 4, $A_4=-0.10$ 5.
1007.0		2408.1	19/2 ⁽⁻⁾	1401.2	15/2 ⁻			
1050.5	4	4567.8	31/2 ⁽⁺⁾	3517.3	27/2 ⁽⁺⁾	E2		Mult.: $A_2=+0.18$ 5, $A_4=-0.05$ 6.

[†] From $\gamma(\theta)$. Evaluator assumes that $\Delta J=2$, Q is E2 (**1986Ha28**).

[‡] At $E(^{13}\text{C})=56$ MeV, $\Delta I\gamma$ for well-resolved peaks are <3% (**1986Ha28**).

[#] From **1990UrZZ**, **1996Ur01**.

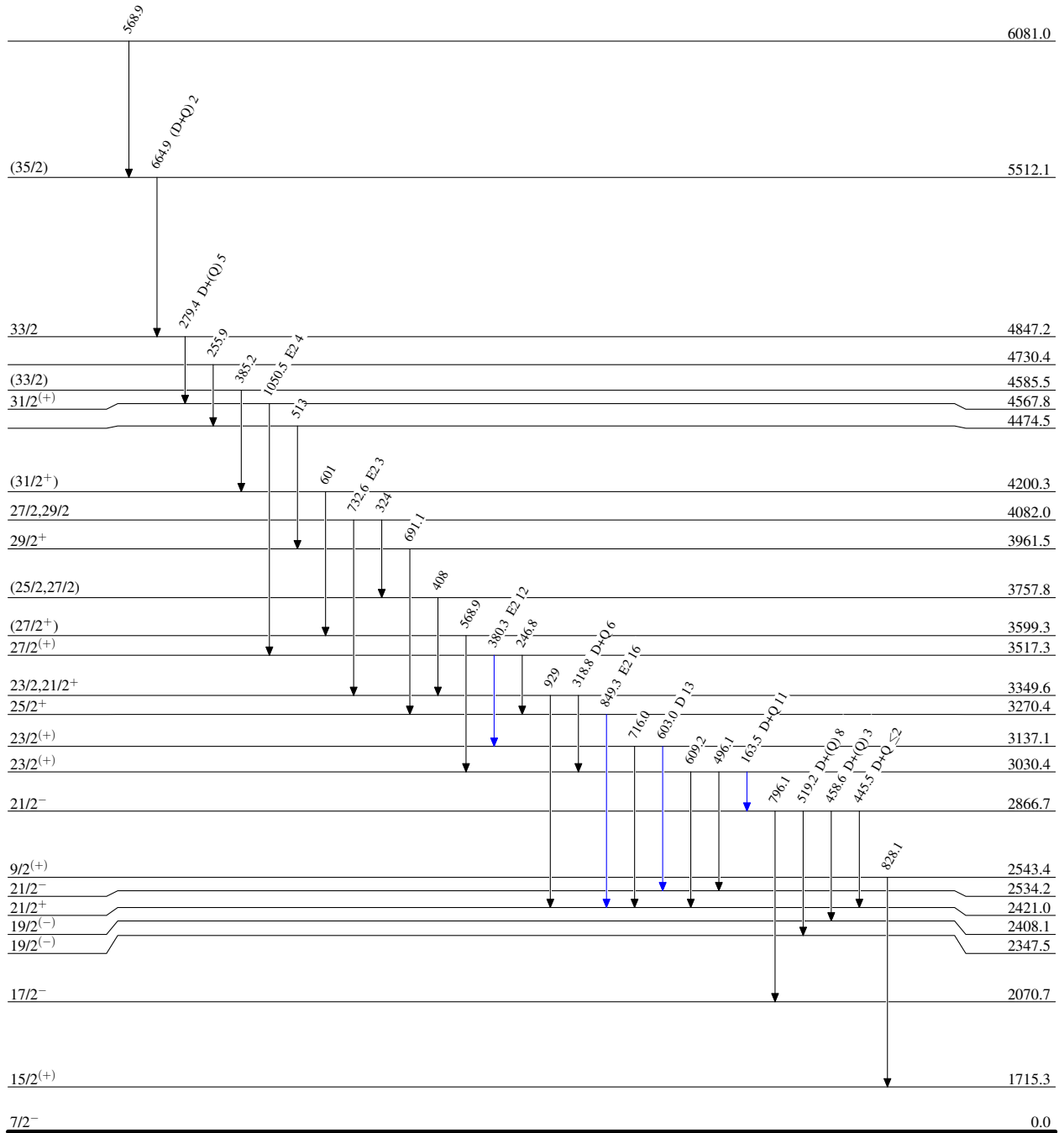
^x γ ray not placed in level scheme.

$^{136}\text{Xe}(^{13}\text{C},4n\gamma)$ 1986Ha28,1996Ur01

Level Scheme
 Intensities: Relative I_γ

Legend

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

 $^{145}_{60}\text{Nd}_{85}$

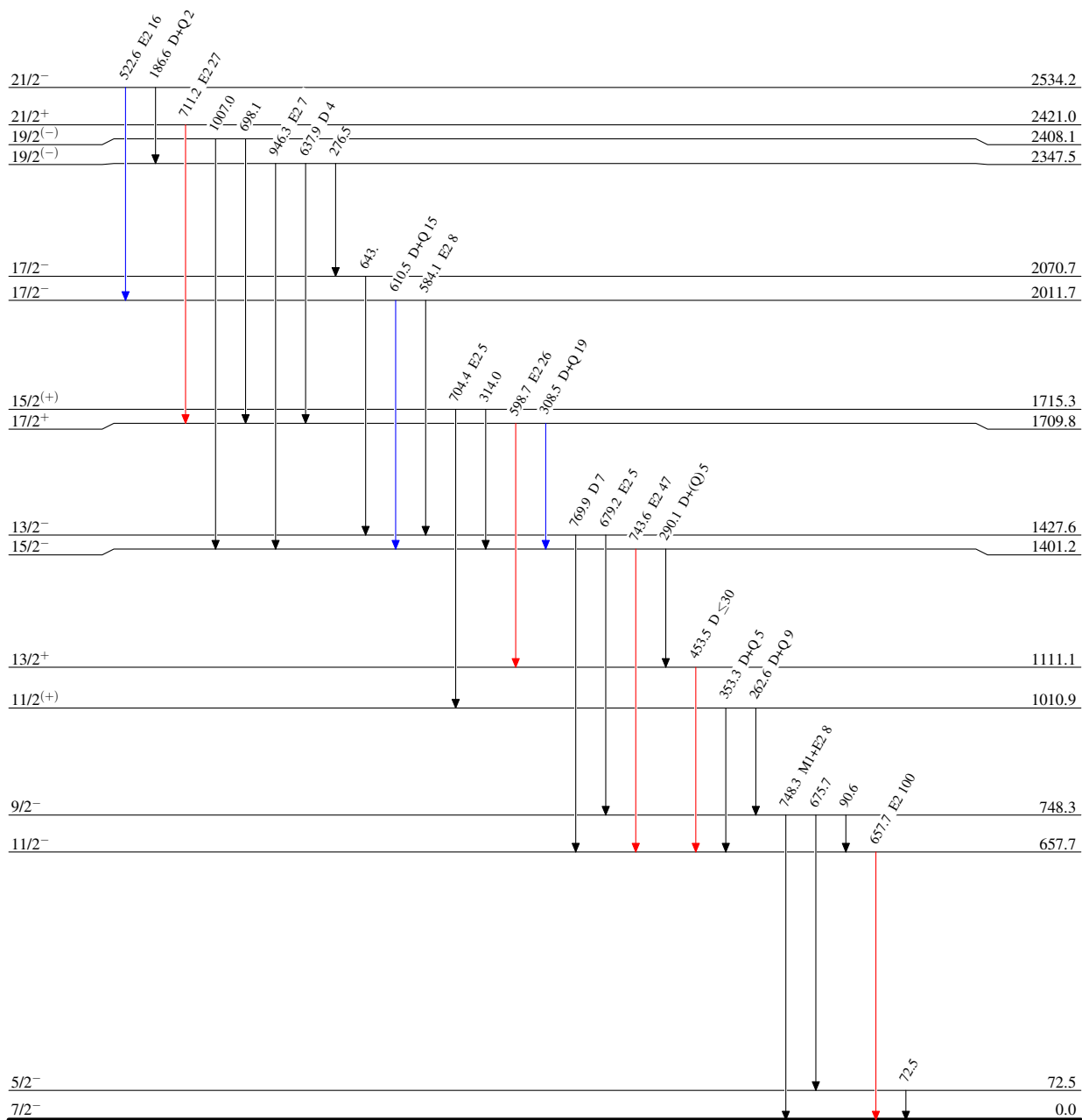
$^{136}\text{Xe}(^{13}\text{C},4n\gamma)$ 1986Ha28,1996Ur01

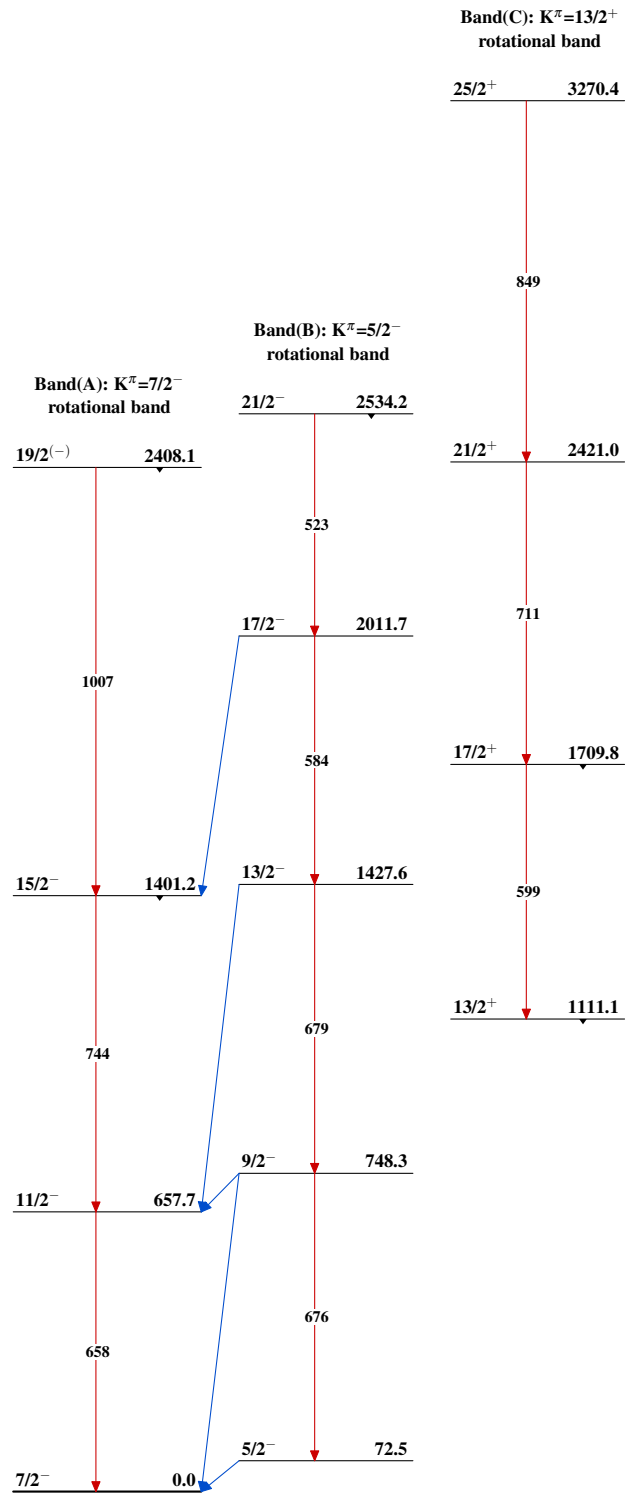
Level Scheme (continued)

Intensities: Relative I_γ

Legend

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

 $^{145}_{60}\text{Nd}_{85}$

$^{136}\text{Xe}(^{13}\text{C},4n\gamma)$ 1986Ha28,1996Ur01 $^{145}_{60}\text{Nd}_{85}$