

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 117, 1 (2014)	1-Oct-2013

$Q(\beta^-) = -6510$ 80; $S(n) = 10310$ 80; $S(p) = 1080$ 80; $Q(\alpha) = 1950$ 90 [2012Wa38](#)

$Q(\epsilon p) = 5460$ 80; $S(2n) = 22900$ 80; $S(2p) = 4810$ 100 ([2012Wa38](#)).

Mass measurement (Penning trap): [2007Ra37](#).

 ^{148}Ho LevelsCross Reference (XREF) Flags

- A** ^{148}Ho IT decay (2.36 ms)
B ^{148}Er ϵ decay (4.6 s)
C ^{149}Tm ϵp decay (0.9 s)
D $^{112}\text{Sn}(^{40}\text{Ar}, p3n\gamma)$

E(level)	J^π	$T_{1/2}$	XREF	Comments
0.0	(1 ⁺)	2.2 s 11	B	$\% \epsilon + \% \beta^+ = 100$ $T_{1/2}$: from 1982No08 . J^π : probable allowed β transitions to 0 ⁺ g.s. in ^{148}Dy and from 0 ⁺ g.s. in ^{148}Er .
0.0+x	(5) ⁻	9.59 s 15	A D	$\% \epsilon + \% \beta^+ = 100$; $\% \epsilon p = 0.08$ 1 (1988To03) E(level): 250 100 from systematics (2011AuZY). $T_{1/2}$: from 1989Ta11 , 1988To03 ; others: 9.7 s 3 (1988To03), 10 s 2 (1981GaZS), 9 s 1 (1979To01). J^π : shell-model prediction (2010Ko12) with configuration= $\pi h_{11/2} \otimes \nu s_{1/2}^{-1}$. Parity from $\log ft \approx 5.3$ to negative parity level at 2348 in ^{148}Dy .
32.3+x	(5) ⁻		A D	Possible configuration= $\pi h_{11/2} \otimes \nu d_{3/2}^{-1}$.
141.5+x	(6) ⁻		A D	Possible configuration= $\pi h_{11/2} \otimes \nu d_{3/2}^{-1}$.
141.7 1			B	
244.0 1			B	
315.3 1			B	
321.3+x	(7) ⁻		A D	J^π : E2 γ to (5) ⁻ . Possible configuration= $\pi h_{11/2} \otimes \nu (d_{3/2}^{-1} \text{ or } d_{5/2}^{-1})$.
429.3 5			B	
512.7 6			B	
525 1			B	
609.5 3			B	
694.4+x	(10) ⁺	2.36 ms 6	A D	$\% \text{IT} = 100$ $T_{1/2}$: from $\gamma(t)$. Weighted average of 2.62 ms 18 (2010Ko12) and 2.35 ms 4 (1989Br22 , 1984Br07). J^π : E3 γ to (7) ⁻ ; shell-model prediction with configuration= $\pi h_{11/2} \otimes \nu h_{11/2}^{-1}$; also (10 ⁺) isomer in N=81 nuclides of ^{142}Pm , ^{146}Tb and ^{150}Tm .
924.9 4			B	
1311.8 3			B	
1636.8 6			B	
1645.8+x ^{†‡} 13	(11)		D	
2121.8 5			B	
2191.0+x ^{†‡} 14	(12)		D	
2735.3+x ^{†‡} 14	(13)		D	
2885.3+x ^{†‡} 14	(14)		D	
3040.1+x 15	(15)		D	
3068.2+x ^{†‡} 15	(15)		D	
3168.5+x ^{†‡} 15	(15)		D	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) ^{148}Ho Levels (continued)

E(level)	J^π	XREF
3363.4+x [‡] 15	(17)	D
3379.4+x 15	(16)	D
3789.4+x [‡] 15	(18)	D

[†] If positive parity, then possible member of configuration= $(\pi h^3_{11/2})_{27/2} \otimes \nu d^{-1}_{5/2}$.

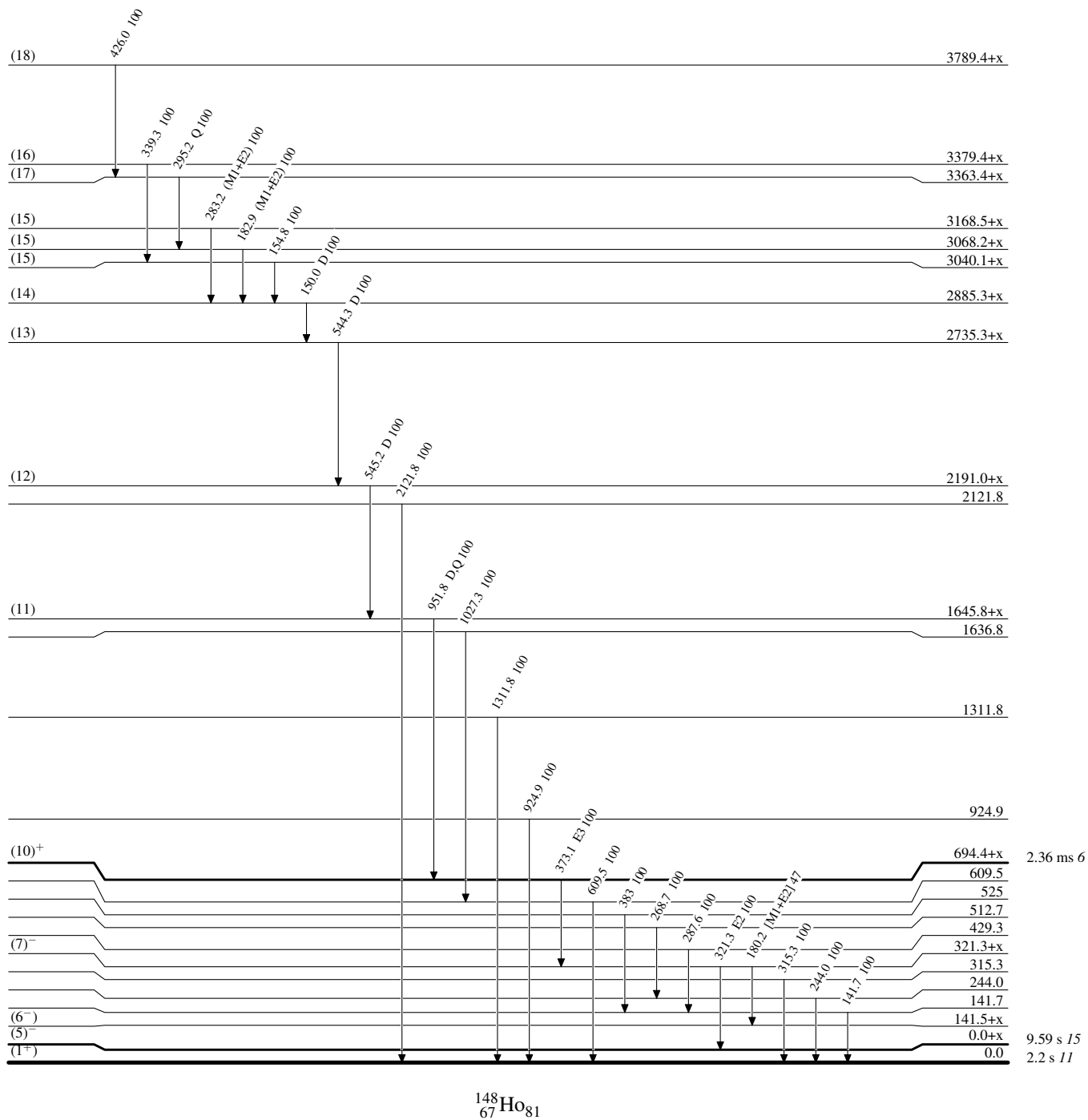
[‡] Band(A): γ sequence based on (11).

$\gamma(^{148}\text{Ho})$								
$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	$\alpha^\dagger$	Comments
32.3+x	(5 ⁻)	32.3 7	100	0.0+x	(5 ⁻)			
141.5+x	(6 ⁻)	108.5 2	100 7	32.3+x	(5 ⁻)			
		141.5 4	45 8	0.0+x	(5 ⁻)			
141.7		141.7 1	100	0.0	(1 ⁺)			
244.0		244.0 1	100	0.0	(1 ⁺)			
315.3		315.3 1	100	0.0	(1 ⁺)			
321.3+x	(7 ⁻)	180.2 1	47 2	141.5+x	(6 ⁻)	[M1+E2]	0.42 8	
		321.3 1	100 3	0.0+x	(5 ⁻)	E2	0.0543	Mult.: from ce data (2010Ko12).
429.3		287.6 4	100	141.7				
512.7		268.7 5	100	244.0				
525		383 1	100	141.7				
609.5		609.5 3	100	0.0	(1 ⁺)			
694.4+x	(10 ⁺)	373.1 1	100	321.3+x	(7 ⁻)	E3	0.1229	$\alpha(\text{K})=0.0759$; $\alpha(\text{L})=0.0361$; $\alpha(\text{M})=0.00867$; $\alpha(\text{N})=0.00198$; $\alpha(\text{O})=0.000250$ B(E3)(W.u.)=0.350 9 Mult.: ce data in 2010Ko12.
924.9		924.9 4	100	0.0	(1 ⁺)			
1311.8		1311.8 3	100	0.0	(1 ⁺)			
1636.8		1027.3 4	100	609.5				
1645.8+x	(11)	951.8	100	694.4+x	(10 ⁺)	D,Q		
2121.8		2121.8 5	100	0.0	(1 ⁺)			
2191.0+x	(12)	545.2	100	1645.8+x	(11)	D		
2735.3+x	(13)	544.3	100	2191.0+x	(12)	D		
2885.3+x	(14)	150.0	100	2735.3+x	(13)	D		
3040.1+x	(15)	154.8	100	2885.3+x	(14)			
3068.2+x	(15)	182.9	100	2885.3+x	(14)	(M1+E2)		
3168.5+x	(15)	283.2	100	2885.3+x	(14)	(M1+E2)		
3363.4+x	(17)	295.2	100	3068.2+x	(15)	Q		
3379.4+x	(16)	339.3	100	3040.1+x	(15)			
3789.4+x	(18)	426.0	100	3363.4+x	(17)			

[†] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ -ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

Adopted Levels, Gammas**Level Scheme**

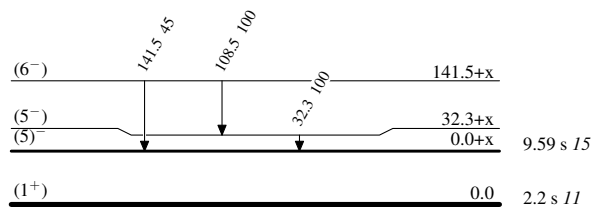
Intensities: Relative photon branching from each level



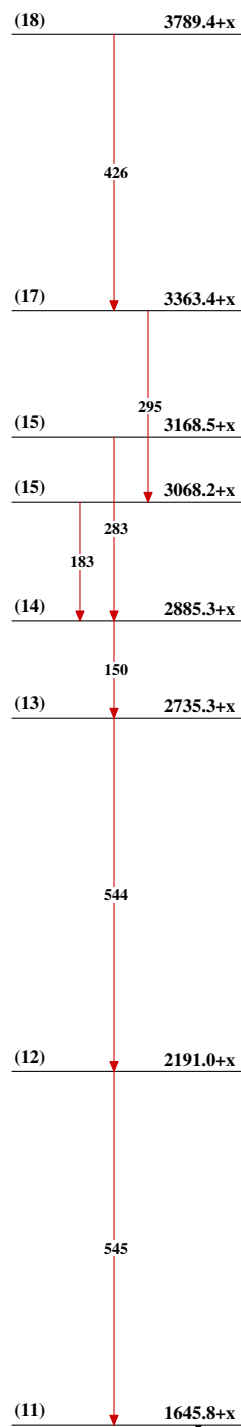
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{148}_{67}\text{Ho}_{81}$

Adopted Levels, GammasBand(A): γ sequence based on (11) $^{148}_{67}\text{Ho}_{81}$