

Pd($^{58}\text{Ni},\text{xn}2\text{p}\gamma$) 2000Di18

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. W. Reich	NDS 113, 157 (2012)	31-Dec-2010

Additional information 1.

Pd($^{58}\text{Ni},\text{xn}2\text{p}\gamma$) at 270 MeV on enriched target of $^{102}\text{Pd}(69\%)$, $^{104}\text{Pd}(12\%)$, $^{105}\text{Pd}(6\%)$, and $^{106}\text{Pd}(6\%)$. Measured $E\gamma$, $I\gamma$, $\gamma(\theta)$ and $\gamma\gamma$ using Gammasphere array of 101 Compton-suppressed Ge detectors, in conjunction with the Fragment Mass Analyzer at ANL.

Data set based on the compilation for the XUNDL database by G. Reed and B. Singh (McMaster University, October, 2000).

 ^{159}Hf Levels

E(level) [†]	J^π [‡]	Comments
0	$7/2^-$	J^π : based on L=0 α decays in the $^{171}\text{Pt} \rightarrow ^{167}\text{Os} \rightarrow ^{163}\text{W}$ decay chain and on the systematics of the observed $13/2^+ \rightarrow 9/2^- \rightarrow 7/2^-$ cascades in these nuclides (2010Sc02).
98.87 [#] 10	$9/2^-$	
635.68 [#] 15	$13/2^-$	
1218.41 [#] 19	$17/2^-$	
1837.19 [#] 21	$21/2^-$	
2339.03 [#] 24	$25/2^-$	
2949.1 [#] 12	$29/2^-$	
3171.9 4		
3511.4 4		
3618.5 [#] 12	$33/2^-$	
3813.6 4		
4276.6 [#] 12	$37/2^-$	
4878.6 [#] 12	$41/2^-$	
5597.7 12		
6274.2 12		
7009.8 12		

[†] From least-squares fit to $E\gamma$'s (by evaluator).

[‡] Values from 200Di18, based on the usual considerations of rotational-band structure as populated in heavy-ion-induced reactions and γ -transition multipolarities.

[#] Band(A): Band based on $9/2^-$.

 $\gamma(^{159}\text{Hf})$

E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	Comments
98.87 10	39 7	98.87	$9/2^-$	0	$7/2^-$	M1	$A_2 = -0.28$ 10. Mult.: Stretched dipole, from A_2 . Intensity balance gives preference for M1 over E1.
302.13 [†] 11	9.2 10	3813.6		3511.4			
339.49 [†] 12	13.0 11	3511.4		3171.9			
501.84 11	57 9	2339.03	$25/2^-$	1837.19	$21/2^-$	E2	$A_2 = +0.38$ 7.
536.81 10	100	635.68	$13/2^-$	98.87	$9/2^-$	E2	$A_2 = +0.24$ 4.
582.73 12	77 9	1218.41	$17/2^-$	635.68	$13/2^-$	E2	$A_2 = +0.30$ 7.
601.99 12	26 5	4878.6	$41/2^-$	4276.6	$37/2^-$	E2	$A_2 = +0.17$ 7.
610.0 11	44 7	2949.1	$29/2^-$	2339.03	$25/2^-$	E2	$A_2 = +0.37$ 3.
618.78 10	70 11	1837.19	$21/2^-$	1218.41	$17/2^-$	E2	$A_2 = +0.49$ 4.
658.05 11	35 6	4276.6	$37/2^-$	3618.5	$33/2^-$	E2	$A_2 = +0.34$ 10.

Continued on next page (footnotes at end of table)

Pd($^{58}\text{Ni},\text{xn2p}\gamma$) 2000Di18 (continued) $\gamma(^{159}\text{Hf})$ (continued)

E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	Comments
669.46 11	36 6	3618.5	33/2 ⁻	2949.1	29/2 ⁻	E2	A ₂ =+0.45 6.
676.5 2	9.0 21	6274.2		5597.7			
^x 708.1 3	6.1 13						
719.17 14	12.7 26	5597.7		4878.6	41/2 ⁻		
735.6 2	9.0 20	7009.8		6274.2			
^x 782.7 3	7.3 13						
832.9 2	4.9 8	3171.9		2339.03	25/2 ⁻		

[†] Ordering of 302-339 γ cascade is taken from the level scheme drawing (fig. 6) of 2000Di18; this ordering is reversed in their tabular data (table ii).

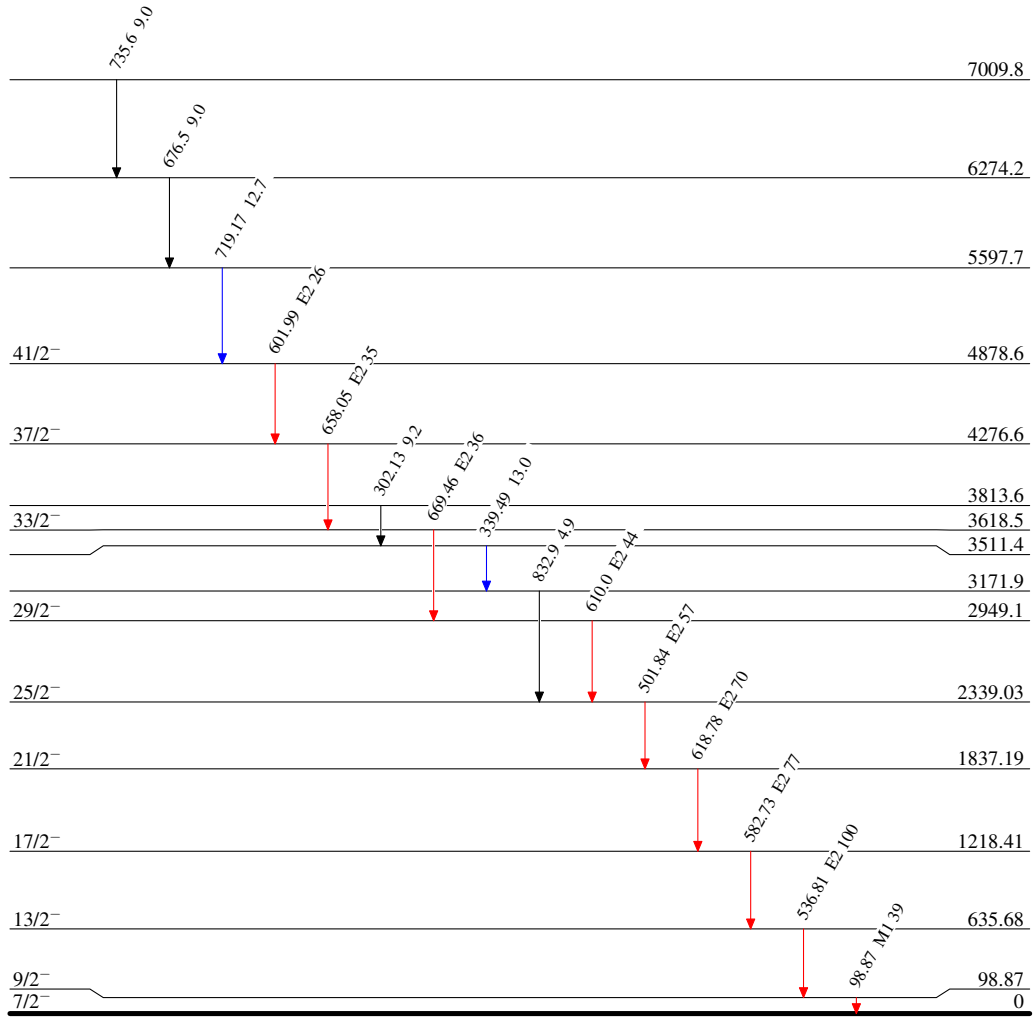
[‡] From authors' interpretation of $\gamma(\theta)$ data. Quadrupole transitions are assumed to be E2 rather than M2.

^x γ ray not placed in level scheme.

Pd($^{58}\text{Ni},\text{xn}2\text{p}\gamma$) 2000Di18Level SchemeIntensities: Relative I_γ

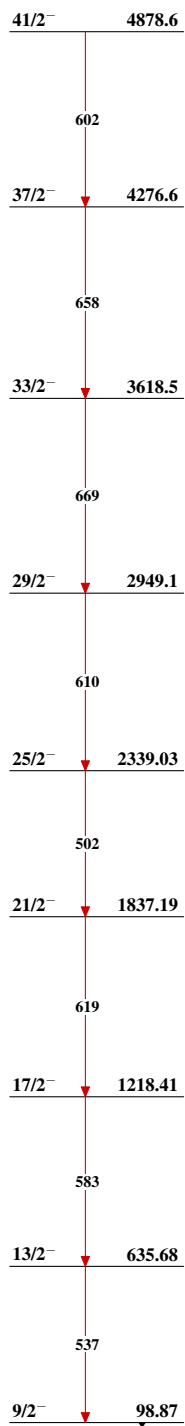
Legend

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

 $^{159}_{72}\text{Hf}_{87}$

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Band(A): Band based on
 $9/2^{-}$

 $^{159}_{72}\text{Hf}_{87}$