^{141}Pr(^{16}O,p7nγ) 2002Go06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 185, 2 (2022)	23-Aug-2022

2002Go06: E=165 MeV ^{16}O beam was produced from the cyclotron of the Center for Nuclear Study, University of Tokyo. Target was 9.4 mg/cm^2 self-supporting natural Pr. γ rays were detected with an array of five (BGO) Compton-suppressed HPGe detectors. Measured Eγ, Iγ, $\gamma\gamma$-coin, $\gamma\gamma$(t). Deduced levels, J^π. Systematics of neighboring isotones.

2003Wa28: Mg(^{132}Xe,xnγ) E=7.0 MeV/nucleon. Measured delayed Eγ, $\gamma(\theta$,H,t); time-differential PAC method; deduced g factor of (49/2$^+$) isomer at 8522 keV.

^{149}Dy Levels

E(level)†	J$^\pi$#	T$_{1/2}$‡	Comments
0.0	7/2$^-$		
1073.0 *3*	13/2$^+$	12.5 ns *15*	
1584.0 *3*	(11/2$^-$)		
2251.8 *5*	17/2$^+$		
2550.8 *6*	21/2$^+$		
2661.7 *6*	27/2$^-$	0.490 s *15*	
3646.6 *7*	29/2$^+$		
3886.5 *8*	31/2$^+$		
4086.0 *8*	33/2$^+$		
5224.2 *8*	35/2$^+$		
5479.4 *8*	37/2$^+$		
5749.5 *8*			
6179.6 *8*	39/2$^+$		J$^\pi$: (41/2$^+$) in the Adopted Levels.
6330.3 *9*			
6679.9 *9*			
6893.1 *9*			
6921.3? *9*	41/2$^+$		
7158.7 *9*			
7243.7 *9*			
7412.1 *9*	43/2$^+$		
8047.1? *12*			
8273.1? *12*			
8522.1 *13*	(49/2$^+$)	28 ns *2*	g=+0.41 *6* (2003Wa28) g: TDPAD method (2003Wa28) with a pulsed ^{132}Xe beam; 984.9γ and 1393.5γ used for measurement. Configuration= $\pi h^2_{11/2}\otimes\nu(f_{7/2}h_{9/2}i_{13/2}d^{-2}_{3/2}\ _0)$ gives calculated g=0.46.
9117.6 *14*			
9411.9 *14*			
9784.9 *14*			
10241.3 *14*			
11203.4 *14*			
11907.6 *15*			
11953.8 *15*			
12212.0 *15*			
12557.9 *15*			
12755.7 *15*			
12814.8 *15*			
13090.8 *15*			
13117.8 *15*			
13730.3 *16*			
13951.8 *16*			

† From a least-squares fit to γ-ray energies, assuming ΔEγ=0.3 keV for Eγ values quoted to tenth of a keV, 1 keV otherwise.

Continued on next page (footnotes at end of table)

^{141}Pr(^{16}O,p7nγ) 2002Go06 (continued)

^{149}Dy Levels (continued)

‡ From the Adopted Levels.
# As given by 2002Go06. The assignments are the same as in the Adopted Levels, except that several have been placed in parentheses as strong arguments are lacking. Exception for J^π assignment of 6179.6 level is noted. For levels above 8522, see the Adopted Levels for tentative J^π assignments.

γ(^{149}Dy)

E_γ †	E_i(level)	J_i^π	E_f	J_f^π	Comments
110.9	2661.7	$27/2^-$	2550.8	$21/2^+$	Mult=E3 in Adopted Gammas.
168.1	7412.1	$43/2^+$	7243.7		
197.7	12755.7		12557.9		
199.6	4086.0	$33/2^+$	3886.5	$31/2^+$	
213.0	6893.1		6679.9		
239.8	3886.5	$31/2^+$	3646.6	$29/2^+$	
249‡#	8522.1	$(49/2^+)$	8273.1?		
253.3	7412.1	$43/2^+$	7158.7		
254.9	5479.4	$37/2^+$	5224.2	$35/2^+$	
269.8	5749.5		5479.4	$37/2^+$	
294.2	9411.9		9117.6		
299.0	2550.8	$21/2^+$	2251.8	$17/2^+$	
303.1	13117.8		12814.8		
335.1	13090.8		12755.7		
350.3	7243.7		6893.1		
430.3	6179.6	$39/2^+$	5749.5		
456.5	10241.3		9784.9		
475‡#	8522.1	$(49/2^+)$	8047.1?		
479.2	7158.7		6679.9		
491.1	7412.1	$43/2^+$	6921.3?	$41/2^+$	
525.4	5749.5		5224.2	$35/2^+$	
543.7	12755.7		12212.0		
580.8	6330.3		5749.5		
595.4	9117.6		8522.1	$(49/2^+)$	
602.8	12814.8		12212.0		
613‡	13730.3		13117.8		
635‡#	8047.1?		7412.1	$43/2^+$	
667.5	9784.9		9117.6		
700.3	6179.6	$39/2^+$	5479.4	$37/2^+$	
704.2	11907.6		11203.4		
742.1	6921.3?	$41/2^+$	6179.6	$39/2^+$	
750.4	11953.8		11203.4		
802.0	12755.7		11953.8		
829.3	10241.3		9411.9		
834‡	13951.8		13117.8		
848.2	12755.7		11907.6		
861‡#	8273.1?		7412.1	$43/2^+$	
861.0	12814.8		11953.8		
915‡	13730.3		12814.8		
930.5	6679.9		5749.5		
962.1‡	11203.4		10241.3		
984.9	3646.6	$29/2^+$	2661.7	$27/2^-$	
1008.6	12212.0		11203.4		
1064.1	7243.7		6179.6	$39/2^+$	
1073.0	1073.0	$13/2^+$	0.0	$7/2^-$	Mult=E3 in Adopted Gammas.

Continued on next page (footnotes at end of table)

^{141}Pr(^{16}O,p7nγ) 2002Go06 (continued)

γ(^{149}Dy) (continued)

E_γ †	E_i(level)	J_i^π	E_f	J_f^π	E_γ †	E_i(level)	J_i^π	E_f	J_f^π
1137‡	13951.8		12814.8		1337.7	5224.2	$35/2^+$	3886.5	$31/2^+$
1138.2	5224.2	$35/2^+$	4086.0	$33/2^+$	1354.3	12557.9		11203.4	
1143.5	6893.1		5749.5		1393.5	5479.4	$37/2^+$	4086.0	$33/2^+$
1178.8	2251.8	$17/2^+$	1073.0	$13/2^+$	1408.9	7158.7		5749.5	
1232.5	7412.1	$43/2^+$	6179.6	$39/2^+$	1584.0	1584.0	$(11/2^-)$	0.0	$7/2^-$

† 2002Go06 seem to quote most values from 1996Gu17, where levels in ^{149}Dy were populated in ^{122}Sn(^{32}S,5nγ) reaction. As indicated, energies of nine gamma rays are from 2002Go06, that were not reported by 1996Gu17 in ^{122}Sn(^{32}S,5nγ).

‡ From 2002Go06 only; not reported in 1996Gu17 in ^{122}Sn(^{32}S,5nγ).

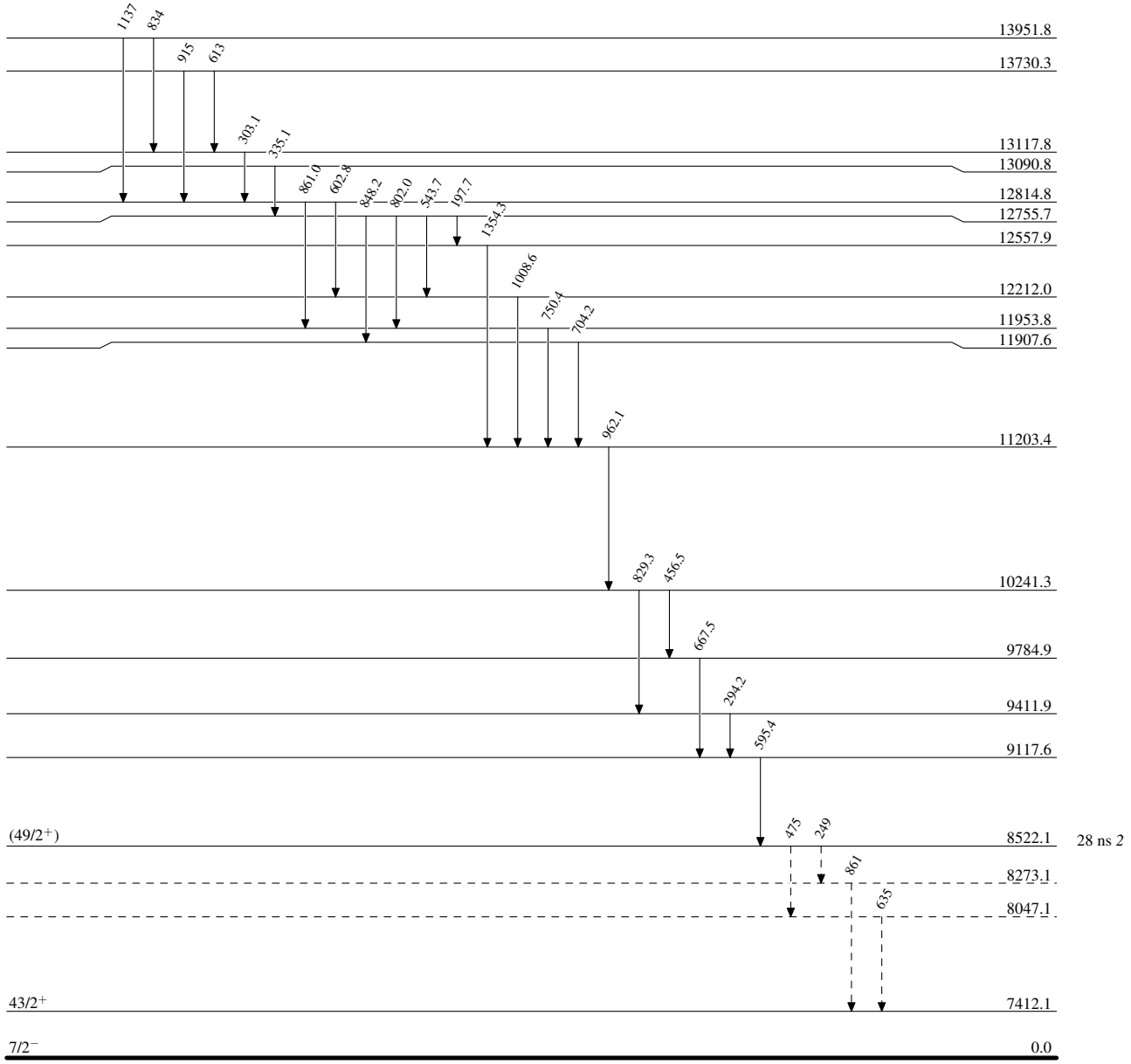
Placement of transition in the level scheme is uncertain.

Legend

^{141}Pr(^{16}O,p7nγ) 2002Go06

Level Scheme

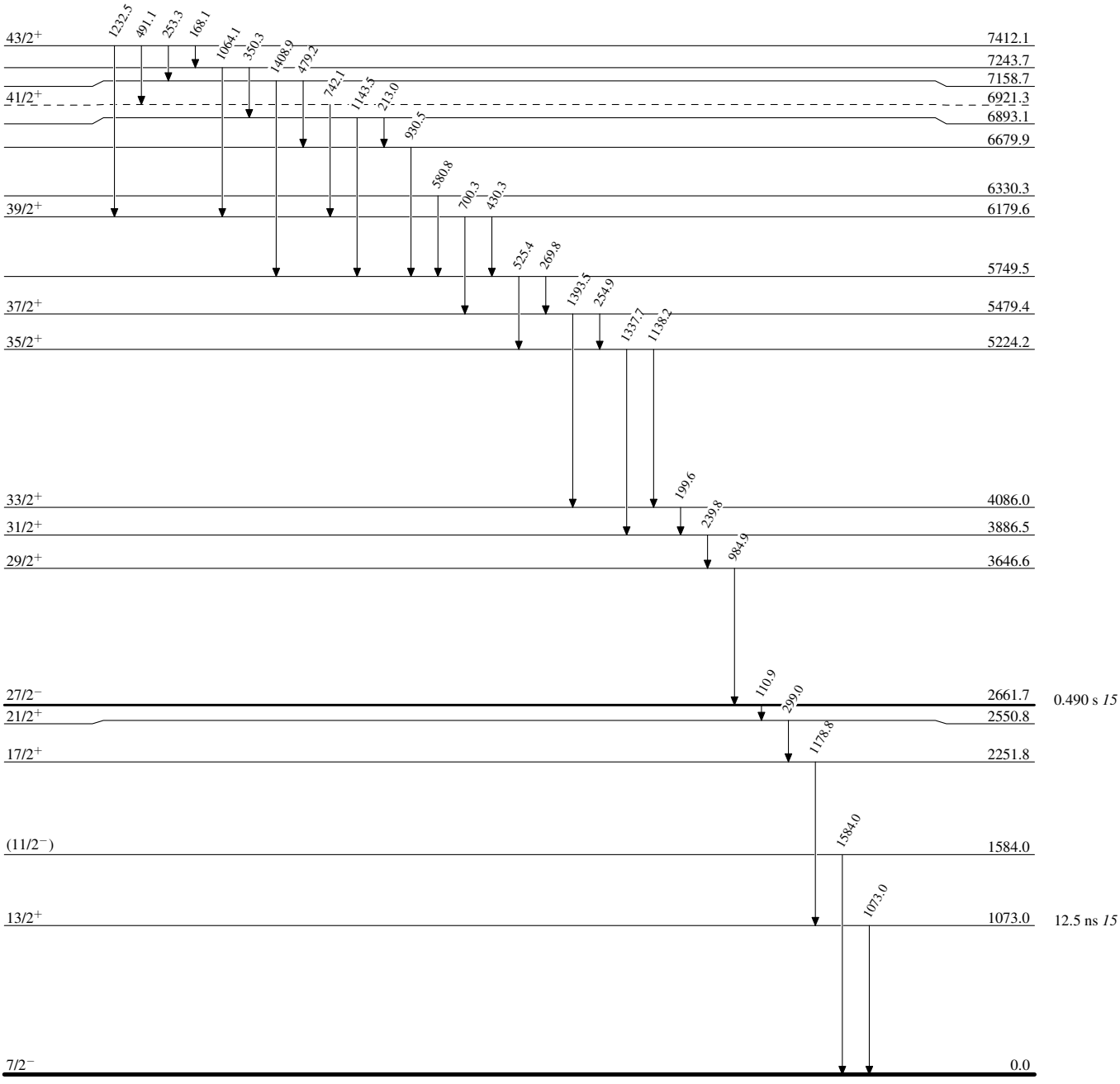
γ Decay (Uncertain)



$^{149}_{66}Dy_{83}$

^{141}Pr(^{16}O,p7nγ) 2002Go06

Level Scheme (continued)



$^{149}_{66}Dy_{83}$