

$^{130}\text{Te}(^{14}\text{N},4n\gamma)$ **2005Yu05**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 154, 1 (2018)	20-Nov-2018

$^{130}\text{Te}(^{14}\text{N},4n\gamma)^{140}\text{Pr}$ E=55-65 MeV; twelve BGO(AC)HPGe detectors placed at 45°, 70°, 90°, -70° and -45° relative to beam direction; measured E γ , I γ , $\gamma\gamma(t)$ with $\Delta(t)=200$ ns, angular distributions from oriented states (ADO).

 ^{140}Pr Levels

E(level) [†]	J π [‡]	T _{1/2} [@]	Comments
(0.0&)	1 ⁺ &	3.39 min 1	
29.5	3 ⁺		Additional information 1.
127.8 10	5 ⁺	0.35 μ s 2	
764.0 15	(7 ⁻)#	3.05 μ s 20	
784.7 17	(8 ⁻)#		
1036.5 17	(8)		
1214.7 17	(9)		
1487.8 20			
1762.0 18	(9 ⁺)		
1815.9 19	(10 ⁺)		
2197.1 20	(11 ⁺)		
2281.9 18			
2476.9 19	(12)		
2869.9 21			
2878.2 21	(13)		
3018.9 20	(14)		
3118.2 21	(15)		
3247.1 21			
3588.2 20			
3627.4 22			
3631.2 21			
3734.6 21			
3788.4 21			
3865.7 23			
3912.4 23			
4031.0 22			
4035.3 23			
4078.9 23	(17)		
4396.9 24			
4550 3			
4718 3			

[†] Fit of γ 's to levels with $\Delta E\gamma=1.0$ keV assigned by evaluator.

[‡] Deduced from experimental asymmetries (detectors placed at 45°, 70°, 90°, -70° and -45° relative to beam direction); no values given (2005Yu06).

Inverted assignment of (7⁻) and (8⁻) for 764.0 keV and 784.7 keV levels as compared to $^{141}\text{Pr}(d,t)$ (1974Hu03), based on deduced (fast) 20.7 γ (M1) in between these levels, and non-observed (slow) 656.9 γ (E3) from 784.7 keV level to 127.8 keV level. 1974Hu03 considered these assignments very likely based on DWBA analysis, but finally preferred the inverted assignment based on 2J+1 rule.

@ From Adopted Levels.

& From Adopted Levels.

$^{130}\text{Te}(^{14}\text{N},4n\gamma)$ **2005Yu05 (continued)** $\gamma(^{140}\text{Pr})$

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.
(20.7 [†])	784.7	(8 ⁻)	764.0	(7 ⁻)	(M1) [‡]	381.1	2197.1	(11 ⁺)	1815.9	(10 ⁺)	
(53.9 [†])	1815.9	(10 ⁺)	1762.0	(9 ⁺)		393.2	2869.9		2476.9	(12)	
98.3	127.8	5 ⁺	29.5	3 ⁺		401.5	2878.2	(13)	2476.9	(12)	
99.5	3118.2	(15)	3018.9	(14)		430.3	1214.7	(9)	784.7	(8 ⁻)	
103.2	3734.6		3631.2			471.1	4550		4078.9	(17)	
140.8	3018.9	(14)	2878.2	(13)		542.0	3018.9	(14)	2476.9	(12)	
149.1	3018.9	(14)	2869.9			547.4	1762.0	(9 ⁺)	1214.7	(9)	
157.4	3788.4		3631.2			616.8	3734.6		3118.2	(15)	
177.8	3912.4		3734.6			636.2	764.0	(7 ⁻)	127.8	5 ⁺	(M2+E3) [#]
178.3	1214.7	(9)	1036.5	(8)		715.7	3734.6		3018.9	(14)	
195.1	2476.9	(12)	2281.9			846.8	3865.7		3018.9	(14)	
200.1	3788.4		3588.2			917.1	4035.3		3118.2	(15)	
240.1	3118.2	(15)	2878.2	(13)		960.7	4078.9	(17)	3118.2	(15)	
242.5	4031.0		3788.4			977.0	1762.0	(9 ⁺)	784.7	(8 ⁻)	
251.8	1036.5	(8)	784.7	(8 ⁻)		1049.8	3247.1		2197.1	(11 ⁺)	
272.5	1036.5	(8)	764.0	(7 ⁻)		1067.4	2281.9		1214.7	(9)	
273.1	1487.8		1214.7	(9)		1111.4	3588.2		2476.9	(12)	
280.0	2476.9	(12)	2197.1	(11 ⁺)		1154.1	3631.2		2476.9	(12)	
296.5	4031.0		3734.6			1390.8	3588.2		2197.1	(11 ⁺)	
321.3	4718		4396.9			1430.3	3627.4		2197.1	(11 ⁺)	
341.0	3588.2		3247.1			1497.0	2281.9		784.7	(8 ⁻)	
365.9	4396.9		4031.0								

[†] γ below detection limit deduced from level scheme.

[‡] consequence of (8⁻) to (7⁻) transition as commented by [2005Yu06](#); see also J^π footnote on the 764 and 784 levels.

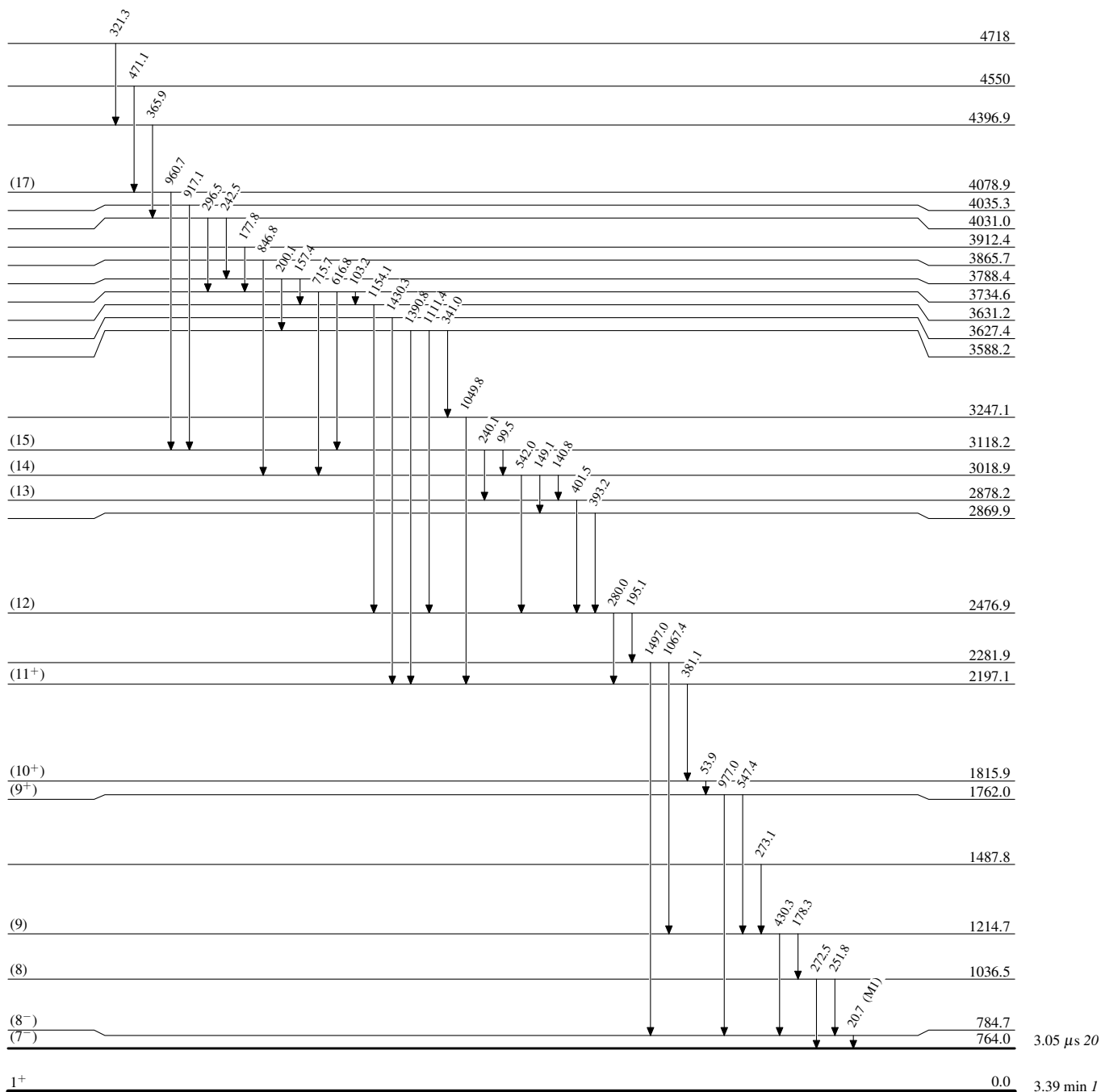
[#] consequence of (7⁻) to 5⁺ transition as commented by [2005Yu06](#); see also J^π footnote on the 764 and 784 levels.

$^{130}\text{Te}(^{14}\text{N},4n\gamma)$ 2005Yu05

Legend

Level Scheme

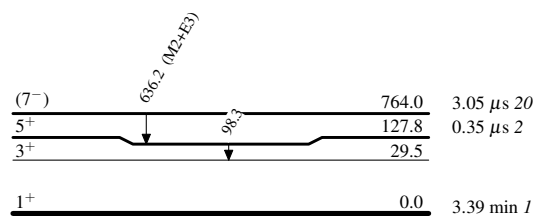
-----► γ Decay (Uncertain)



$^{140}_{59}\text{Pr}_{81}$

$^{130}\text{Te}(^{14}\text{N},4n\gamma)$ 2005Yu05

Level Scheme (continued)

 $^{140}_{59}\text{Pr}_{81}$