^{141}Pr(α,nγ), ^{144}Nd(p,nγ) 1975Ma04

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	A. A. Sonzogni	NDS 93, 599 (2001)	1-Dec-2000

E(α)=16.5 MeV, E(p)=10 MeV.
Measured: γ(semi), $\gamma\gamma$ (semi-semi), excitation functions.
1977Na07 studied ce, γ(semi detectors) in (α,nγ) E≤24 MeV.
J^π: from Adopted Levels.

^{144}Pm Levels

States above 600 keV are assumed to belong to (π,2d3/2) and (π,1h11/2) orbitals. Parity is from L values in (^{3}He,d),(α,t).

E(level)	J^π	E(level)	J^π	E(level)	J^π	E(level)	J^π
0.0	5^-	207.37 *4*	$(4)^-$	785.03 *12*		1021.81 *11*	$(2,3)^+$
60.727 *15*	$(4)^-$	232.393 *19*	$(6)^-$	840.78 *6*	$(9)^+$	1080.21 *17*	$(4^-,5^-)$
66.64 *4*	$(3)^-$	249.91 *3*	$(1)^-$	875.75 *11*	$^-$	1337.4 *4*	
80.03 *3*	$(2)^-$	279.286 *25*	$(3)^-$	899.09 *14*	$(2,3)^+$		
171.804 *10*	$(6)^-$	363.25 *3*	$(2)^-$	942.99 *11*			
195.433 *15*	$(5)^-$	514.23 *3*	$(7)^-$	948.11 *21*	$(4,5)^+$		

γ(^{144}Pm)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	Comments
(5.89)		66.64	$(3)^-$	60.727	$(4)^-$		
(13.4)		80.03	$(2)^-$	66.64	$(3)^-$		
[x]55.47[‡] *5*	1.10 *25*						
60.74 *2*	52 *4*	60.727	$(4)^-$	0.0	5^-		
71.96 *3*	4.2 *4*	279.286	$(3)^-$	207.37	$(4)^-$		
78.84 *6*	0.86 *10*	1021.81	$(2,3)^+$	942.99			
83.99 *3*	4.6 *3*	363.25	$(2)^-$	279.286	$(3)^-$		
[x]90.37[‡] *9*	0.57 *13*						
[x]105.94[‡] *5*	1.15 *10*						
[x]107.06 *4*	1.40 *12*						
[x]108.57 *4*	1.36 *11*						
113.35 *2*	1.89 *10*	363.25	$(2)^-$	249.91	$(1)^-$		
[x]130.19[‡] *9*	0.75 *10*						
134.71 *1*	39.0 *16*	195.433	$(5)^-$	60.727	$(4)^-$		
140.73 *1*	20.5 *9*	207.37	$(4)^-$	66.64	$(3)^-$		
[x]151.52[‡] *10*	0.90 *12*						
158.00[#] *8*	0.5 *1*	942.99		785.03			I_γ: deduced from Iγ(158γ)/Iγ(876γ) in (p,n) reaction. Iγ<0.5 in (α,nγ).
169.88 *1*	24.8 *11*	249.91	$(1)^-$	80.03	$(2)^-$		
171.80 *1*	100 *4*	171.804	$(6)^-$	0.0	5^-	E2(+M1)	
[x]184.27 *3*	4.5 *3*						
195.42 *2*	8.7 *4*	195.433	$(5)^-$	0.0	5^-		
199.25 *1*	8.5 *4*	279.286	$(3)^-$	80.03	$(2)^-$		
212.62 *5*	1.69 *19*	279.286	$(3)^-$	66.64	$(3)^-$		
218.56 *2*	23.1 *9*	279.286	$(3)^-$	60.727	$(4)^-$		
[x]223.72[‡] *7*	1.92 *23*						
232.41 *2*	73 *3*	232.393	$(6)^-$	0.0	5^-		
281.94 *5*	28.3 *12*	514.23	$(7)^-$	232.393	$(6)^-$		
283.16 *9*	4.0 *4*	363.25	$(2)^-$	80.03	$(2)^-$		

Continued on next page (footnotes at end of table)

^{141}Pr(α,nγ), ^{144}Nd(p,nγ) 1975Ma04 (continued)

$\gamma(^{144}Pm)$ (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	α[a]	Comments
296.54 *4*	7.2 *5*	363.25	$(2)^-$	66.64	$(3)^-$			
326.54 *5*	15.3[@] *9*	840.78	$(9)^+$	514.23	$(7)^-$	M2	0.244	α(K)= 0.2012; α(L)= 0.0336; α(M)=0.00729; α(N+..)=0.00203
342.38[‡] *3*	18.9 *9*	514.23	$(7)^-$	171.804	$(6)^-$	M1	0.0533	α(K)= 0.0454; α(L)=0.00620; α(M)=0.00132; α(N+..)=0.00036
[x]432.87[‡] *12*	4.1 *3*							
[x]446.3[#] *5*	<1							
[x]453.5[‡] *3*	1.6 *3*							
[x]456.8[#] *5*	<1							
535.2 *3*	1.6 *5*	899.09	$(2,3)^+$	363.25	$(2)^-$			
[x]553.67 *17*	4.2 *4*							
[x]563.7[‡] *4*	2.4 *4*							
[x]578.8 *7*	2.1 *9*							
[x]608.66 *12*	3.6 *4*							
669.07 *12*	16.0[@] *9*	840.78	$(9)^+$	171.804	$(6)^-$	E3	0.0147	α(K)=0.01158; α(L)=0.00232
[x]675.3[‡] *5*	1.8 *3*							
[x]708.0[#] *4*	<2							
718.60[#] *20*	<2	785.03		66.64	$(3)^-$			
[x]731.2[#] *3*	<2							
[x]733.6[#] *3*	<2							
[x]741.69[‡] *21*	4.9 *5*							
[x]756.2 *5*	2.8 *5*							
[x]759.03 *10*	20.7 *11*							
[x]769.10 *10*	17.1 *8*							
[x]775.8 *10*	1.9 *4*							
[x]780.0 *10*	2.3 *4*							
[x]791.03 *21*	5.7 *4*							
809.10 *10*	11.4 *7*	875.75	$^-$	66.64	$(3)^-$			
815.0[#] *10*	<2	875.75	$^-$	60.727	$(4)^-$			
819.21 *15*	6.3 *5*	899.09	$(2,3)^+$	80.03	$(2)^-$			
862.89 *23*	5.6 *4*	942.99		80.03	$(2)^-$			
876.40 *17*	5.8 *6*	942.99		66.64	$(3)^-$			
887.2 *5*	2.7 *6*	948.11	$(4,5)^+$	60.727	$(4)^-$			
[x]896.0[#] *10*	<2							
908.42 *17*	12.2 *8*	1080.21	$(4^-,5^-)$	171.804	$(6)^-$			
[x]910.93 *20*	10.6 *8*							
[x]926.4 *3*	4.4 *5*							
[x]931.2[‡] *5*	2.3 *5*							
[x]936.9 *4*	1.6 *6*							
941.58 *18*	6.3 *6*	1021.81	$(2,3)^+$	80.03	$(2)^-$			
948.15 *23*	5.1 *5*	948.11	$(4,5)^+$	0.0	5^-			
[x]962.23 *21*	4.4 *8*							
[x]1019.02 *23*	4.1 *5*							
[x]1048.46[‡] *18*	5.0 *11*							
1058.1 *4*	4.3 *7*	1337.4		279.286	$(3)^-$			
[x]1071.3 *3*	4.9 *5*							
1080.0 *7*	2.7 *6*	1080.21	$(4^-,5^-)$	0.0	5^-			
[x]1083.08 *23*	5.8 *7*							
[x]1114.5 *4*	2.7 *7*							
[x]1128.0[#] *3*	<2							
[x]1144.6 *7*	6.1 *12*							

Continued on next page (footnotes at end of table)

^{141}Pr(α,nγ), ^{144}Nd(p,nγ) 1975Ma04 (continued)

$\gamma(^{144}Pm)$ (continued)

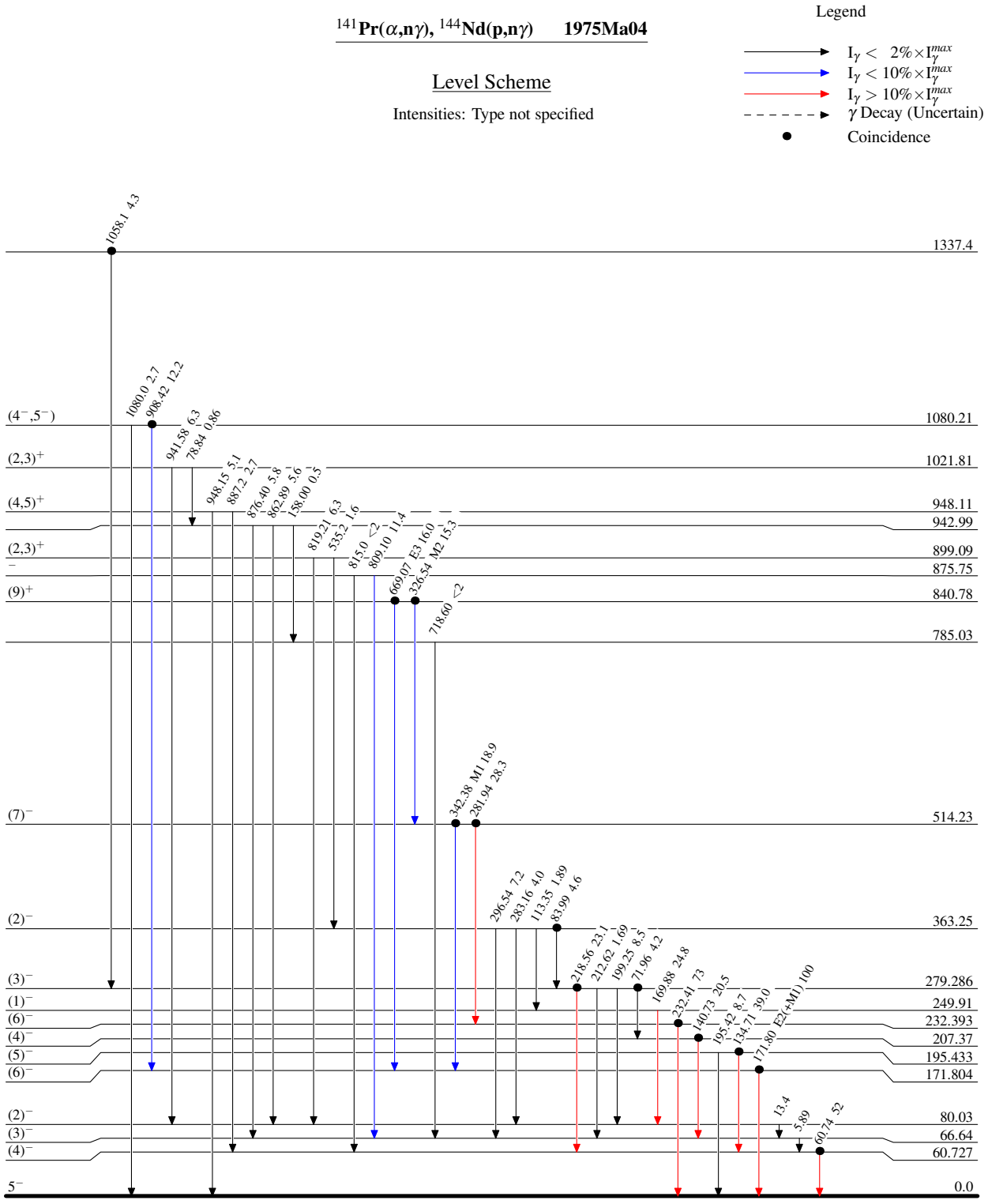
E_γ	I_γ[†]	E_i(level)	E_γ	I_γ[†]	E_i(level)	E_γ	I_γ[†]	E_i(level)
[x]1157.6 *3*	4.5 *8*		[x]1309.0 *10*	12.7 *14*		[x]1421.4 *5*	4.2 *7*	
[x]1214.56[‡] *21*	5.1 *9*		[x]1331.2[#] *10*	<3		[x]1448.0 *8*	1.5 *7*	
[x]1220.6 *5*	4.8 *10*		[x]1335.0[‡] *20*	21.0 *20*		[x]1514.4[#] *5*	<3	
[x]1230.05 *23*	5.1 *9*		[x]1342.0[#] *10*	<3		[x]1545.0[#] *10*	<3	

[†] From (α,nγ); see 1975Ma04 for Iγ in (p,nγ).
[‡] Seen only in (α,nγ).
[#] Seen only in (p,nγ).
[@] Iγ(669γ)/Iγ(326γ)=0.88 *7* (1977Na07).
[&] From α(K)exp measurements of 1977Na07.
[a] 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.
[x] γ ray not placed in level scheme.

^{141}**Pr(α,nγ), ^{144}Nd(p,nγ) 1975Ma04**

Level Scheme

Intensities: Type not specified



$^{144}_{61}Pm_{83}$