

(HI,xn γ) 1987Pr09,1988Wi06

Type	Author	History	Citation	Literature Cutoff Date
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$^{140}\text{Ce}(\alpha,2n\gamma)$ $E(\alpha)=20\text{-}27$ MeV (1987Pr09), $E(\alpha)=40$ MeV (1975De13), $^{139}\text{La}(^7\text{Li},4n\gamma)$ (1975KI01).

$^{130}\text{Te}(^{16}\text{O},4n\gamma)$ $E(^{16}\text{O})=73, 75, 78$ MeV (1988Wi06,1975DeXS).

Measured: $\gamma, \gamma\gamma, \gamma(\theta)$, linear pol of γ 's (1987Pr09,1988Wi06), $\gamma(t)$ (1987Pr09,1975KI01), $\gamma, \gamma\gamma, \gamma(\theta)$ (1975De13).

 ^{142}Nd Levels

The level scheme is a combination of data from 1987Pr09 and 1988Wi06.

E(level)	J π^{\ddagger}	T $_{1/2}^{\dagger}$	Comments
0.0	0 ⁺		
1575.3 10	2 ⁺		
2083.2 13	3 ⁻		
2100.1 13	4 ⁺	28 ns 2	T $_{1/2}$: from 1975KI01.
2208.6 15	6 ⁺		
2386.2# 15	2 ⁺		
2436.5# 15	4 ⁺		
2513.1# 15	5 ⁺		
2546.6# 16	3 ⁺		
2736.6# 16	4 ⁺		J π : 4 ⁺ from (HI,xn γ) data, 4 ⁻ from (n,n' γ) data.
2885.6# 16	6 ⁺		
2975.3# 14	5 ⁻		
3009.6#	4 ⁺		
3086.0#	5 ⁺		
3241.7 16	7 ⁻		
3244.4#	4 ⁻		
3295.8#	(5 ⁻)		
3413#	(5 ⁻)		
3439.6#			
3448#			
3452.5 16	8 ⁺		
3455.3 16	8 ⁻		
3484.2 16	9 ⁻	1.6 ns 2	
3519.1# 16	(7 ⁺)		
3765.6# 17	(8 ⁻)		
3831.2# 16	8 ⁺		
3860.7#			
3924.3 16	10 ⁺	0.6 ns 1	
3953.0 17	(8 ⁻)		
4070.0#			
4242.2# 17	(9 ⁺)		
4319.0# 19	(9)		
4604.2# 18	(10 ⁺)		
4605.3 18	10 ⁻		
4616.7# 20	(10)		
4715.8 17	11 ⁻		
4985.5 18	(11 ⁻)		

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(HI,xn γ) 1987Pr09,1988Wi06 (continued) ^{142}Nd Levels (continued)

E(level)	J $^{\pi}$ [‡]	Comments
5086.7 17	(11 ⁻)	
5181.5 [#] 19	(11)	
5201.5 17	(12 ⁻)	
5258.7 17	(13 ⁻)	
5306.4 17	(12 ⁻)	
5315.8 [#]		
5437.8 [#]		
5445.9 18		
5467.4 17	(13 ⁻)	
5513.6 [#]		
5650.8 [#]		
5727.6 18		
5744.8 17	(14 ⁻)	
6245.7 18	(14 ⁺)	
6439.6 18	(14 ⁺)	
6605.1 18		
6617.5 18		
6655.3 18	(15 ⁺)	
6758.9 19		
6814.8 18		
6887.0 18		
7004.4 19	15 ⁽⁺⁾	
7121.9 18		
7128.7 18	(16 ⁺)	E(level): may be a doublet with strong 473.7 γ and 314.0 γ from 7128.9 level and 124.1 γ and 241.2 γ from 7128.0 level.
7183.3 17		
7402.1 18		
7649.7 19		
7750.5 19		
7758.9 19		
7900.7 19		
7920.2 18	(16 ⁺)	
8076.5 19		
8151.5 18		
8408.0 20		
8517.0 21		
8524.3 19	(18 ⁺)	
8911.9 21		
9256.6 23		
9532.5 21	(20 ⁺)	
9660.4 25		
10342.7 24	(22 ⁺)	
11079 3	(24 ⁺)	
11486 3		
12158 3		

[†] From 1987Pr09, except where noted otherwise.

[‡] From Adopted Levels. J $^{\pi}$ for levels seen only In this reaction are based on $\gamma(\theta)$, linear pol.

[#] Observed only in 1987Pr09.

(HI,xn γ) 1987Pr09,1988Wi06 (continued) $\gamma(^{142}\text{Nd})$

E_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π
16.9#	2100.1	4 ⁺	2083.2	3 ⁻
28.7#	3484.2	9 ⁻	3455.3	8 ⁻
31.5#	3484.2	9 ⁻	3452.5	8 ⁺
76.6#	2513.1	5 ⁺	2436.5	4 ⁺
100.8	7750.5		7649.7	
105.2#	5306.4	(12 ⁻)	5201.5	(12 ⁻)
108.4	2208.6	6 ⁺	2100.1	4 ⁺
114.6	5201.5	(12 ⁻)	5086.7	(11 ⁻)
124.1	7128.7	(16 ⁺)	7004.4	15 ⁽⁺⁾
141.4	6758.9		6617.5	
161.1	5467.4	(13 ⁻)	5306.4	(12 ⁻)
172.1	5258.7	(13 ⁻)	5086.7	(11 ⁻)
187.1	5445.9		5258.7	(13 ⁻)
190.1#	2736.6	4 ⁺	2546.6	3 ⁺
210.6#	3452.5	8 ⁺	3241.7	7 ⁻
213.5	3455.3	8 ⁻	3241.7	7 ⁻
215.9	6655.3	(15 ⁺)	6439.6	(14 ⁺)
218.8	7402.1		7183.3	
231.4	8151.5		7920.2	(16 ⁺)
241.2	7128.7	(16 ⁺)	6887.0	
242.4	3484.2	9 ⁻	3241.7	7 ⁻
247.5	7649.7		7402.1	
250.8	8151.5		7900.7	
260.1	5727.6		5467.4	(13 ⁻)
265.9	5467.4	(13 ⁻)	5201.5	(12 ⁻)
277.5	5744.8	(14 ⁻)	5467.4	(13 ⁻)
281.3#	3765.6	(8 ⁻)	3484.2	9 ⁻
304.6#	2513.1	5 ⁺	2208.6	6 ⁺
310.3#	3765.6	(8 ⁻)	3455.3	8 ⁻
312.2#	3831.2	8 ⁺	3519.1	(7 ⁺)
314.0	7128.7	(16 ⁺)	6814.8	
317.8#	4242.2	(9 ⁺)	3924.3	10 ⁺
320.9	5306.4	(12 ⁻)	4985.5	(11 ⁻)
325.8@	8076.5		7750.5	
331.1	8408.0		8076.5	
336.4#	2436.5	4 ⁺	2100.1	4 ⁺
344.7	9256.6		8911.9	
348.6	7750.5		7402.1	
362.1#	4604.2	(10 ⁺)	4242.2	(9 ⁺)
365.5	8517.0		8151.5	
372.5#	2885.6	6 ⁺	2513.1	5 ⁺
372.8	8524.3	(18 ⁺)	8151.5	
374.5#	4616.7	(10)	4242.2	(9 ⁺)
378.5#	3831.2	8 ⁺	3452.5	8 ⁺
403.8	9660.4		9256.6	
407.3	11486		11079	(24 ⁺)
409.6	6655.3	(15 ⁺)	6245.7	(14 ⁺)
411#d	4242.2	(9 ⁺)	3831.2	8 ⁺
413.1#	2513.1	5 ⁺	2100.1	4 ⁺
433.9#	3953.0	(8 ⁻)	3519.1	(7 ⁺)

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(HI,xn γ) 1987Pr09,1988Wi06 (continued) $\gamma(^{142}\text{Nd})$ (continued)

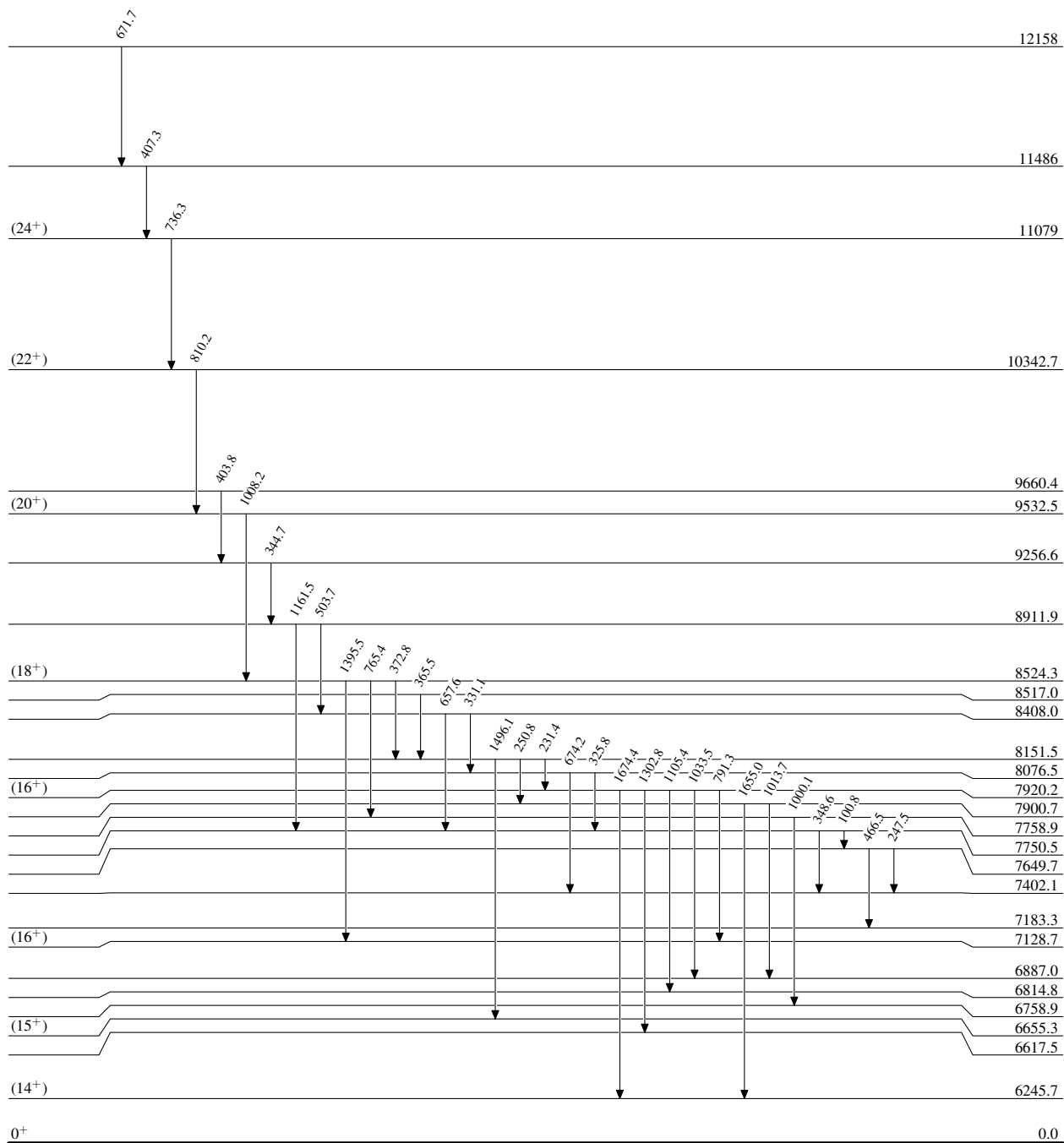
E_γ ‡	E_i (level)	J_i^π	E_f	J_f^π	Mult.	α^\dagger	Comments
440.1	3924.3	10 ⁺	3484.2	9 ⁻			
446.5#	2546.6	3 ⁺	2100.1	4 ⁺			
466.5	7649.7		7183.3				
468.7#	3953.0	(8 ⁻)	3484.2	9 ⁻			
468.9	5727.6		5258.7	(13 ⁻)			
471.6	3924.3	10 ⁺	3452.5	8 ⁺	E2&	0.01380	$\alpha(\text{K})=0.01139$ 16; $\alpha(\text{L})=0.00190$ 3; $\alpha(\text{M})=0.000410$ 6; $\alpha(\text{N}+..)=0.0001047$ 15 $\alpha(\text{N})=9.09\times 10^{-5}$ 13; $\alpha(\text{O})=1.321\times 10^{-5}$ 19; $\alpha(\text{P})=6.64\times 10^{-7}$ 10
473.7	7128.7	(16 ⁺)	6655.3	(15 ⁺)			
486.0	5744.8	(14 ⁻)	5258.7	(13 ⁻)			
486.3	5201.5	(12 ⁻)	4715.8	11 ⁻			
497.9#	3953.0	(8 ⁻)	3455.3	8 ⁻			
503.7	8911.9		8408.0				
507.9	2083.2	3 ⁻	1575.3	2 ⁺			
524.1#	3765.6	(8 ⁻)	3241.7	7 ⁻			
524.8	2100.1	4 ⁺	1575.3	2 ⁺			
526.1	5727.6		5201.5	(12 ⁻)			
538.8#	2975.3	5 ⁻	2436.5	4 ⁺			
542.8	5258.7	(13 ⁻)	4715.8	11 ⁻			
543.2	5744.8	(14 ⁻)	5201.5	(12 ⁻)			
553# <i>d</i>	4319.0	(9)	3765.6	(8 ⁻)			
564.6	7004.4	15 ⁽⁺⁾	6439.6	(14 ⁺)			
565.9	7183.3		6617.5				
578.3	7183.3		6605.1				
590.3	5306.4	(12 ⁻)	4715.8	11 ⁻			
596.1	5201.5	(12 ⁻)	4605.3	10 ⁻			
636.5#	2736.6	4 ⁺	2100.1	4 ⁺			
643.2	7402.1		6758.9				
657.6	8408.0		7750.5				
671.7	12158		11486				
674.2	8076.5		7402.1				
677.1#	2885.6	6 ⁺	2208.6	6 ⁺			
736.3	11079	(24 ⁺)	10342.7	(22 ⁺)			
765.4	8524.3	(18 ⁺)	7758.9				
790#	4242.2	(9 ⁺)	3452.5	8 ⁺			
791.3	7920.2	(16 ⁺)	7128.7	(16 ⁺)			
791.6	4715.8	11 ⁻	3924.3	10 ⁺			
810.2	10342.7	(22 ⁺)	9532.5	(20 ⁺)			
810.9#	2386.2	2 ⁺	1575.3	2 ⁺			
866.5#	4319.0	(9)	3452.5	8 ⁺			
872.7	6617.5		5744.8	(14 ⁻)			
875.2#	2975.3	5 ⁻	2100.1	4 ⁺			
890.0	6617.5		5727.6				
892.0#	2975.3	5 ⁻	2083.2	3 ⁻			
910.4	6655.3	(15 ⁺)	5744.8	(14 ⁻)			
937.7	7183.3		6245.7	(14 ⁺)			
945.8#	3831.2	8 ⁺	2885.6	6 ⁺			
972.3	6439.6	(14 ⁺)	5467.4	(13 ⁻)			
987.0	6245.7	(14 ⁺)	5258.7	(13 ⁻)			
1000.1	7758.9		6758.9				
1006.1#	3519.1	(7 ⁺)	2513.1	5 ⁺			
1008.2	9532.5	(20 ⁺)	8524.3	(18 ⁺)			

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(HI,xn γ) 1987Pr09,1988Wi06 (continued) $\gamma(^{142}\text{Nd})$ (continued)

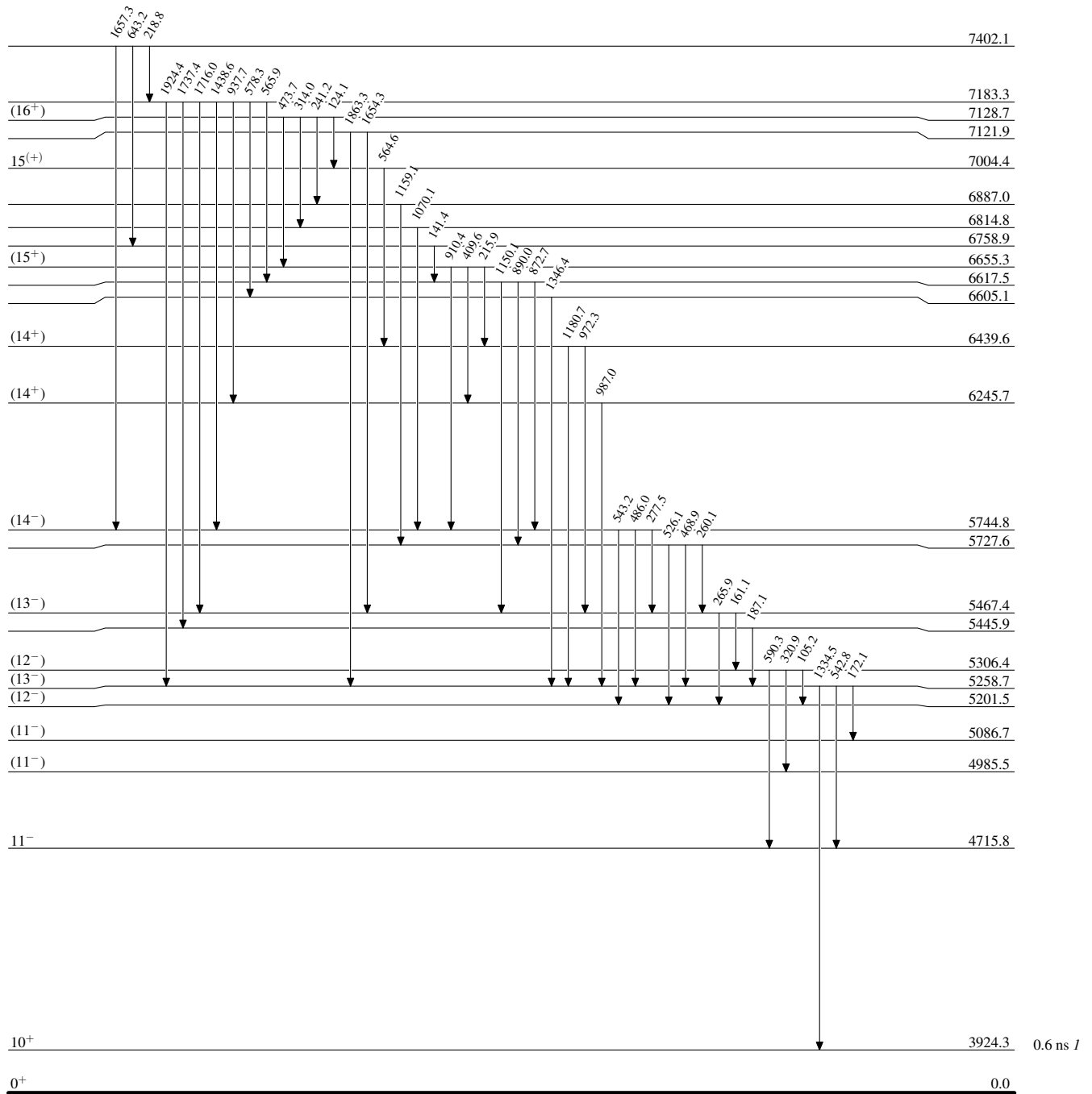
E_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	α^\dagger	Comments
1013.7	7900.7		6887.0				
1033.1	3241.7	7 ⁻	2208.6	6 ⁺			
1033.5	7920.2	(16 ⁺)	6887.0				
1070.1	6814.8		5744.8	(14 ⁻)			
1105.4	7920.2	(16 ⁺)	6814.8				
1119.9 [#]	4604.2	(10 ⁺)	3484.2	9 ⁻			
1149.9	4605.3	10 ⁻	3455.3	8 ⁻			
1150.1	6617.5		5467.4	(13 ⁻)			
1159.1 ^a	6887.0		5727.6				
1161.5	8911.9		7750.5				
1162.4	5086.7	(11 ⁻)	3924.3	10 ⁺			
1180.7	6439.6	(14 ⁺)	5258.7	(13 ⁻)			
1231.8	4715.8	11 ⁻	3484.2	9 ⁻			
1243.9	3452.5	8 ⁺	2208.6	6 ⁺	E2 ^b	0.001440 21	$\alpha=0.001440$ 21; $\alpha(\text{K})=0.001222$ 18; $\alpha(\text{L})=0.0001629$ 23; $\alpha(\text{M})=3.44\times 10^{-5}$ 5; $\alpha(\text{N}+..)=2.06\times 10^{-5}$ $\alpha(\text{N})=7.69\times 10^{-6}$ 11; $\alpha(\text{O})=1.163\times 10^{-6}$ 17; $\alpha(\text{P})=7.41\times 10^{-8}$ 11; $\alpha(\text{IPF})=1.163\times 10^{-5}$ 17
1257.2 [#]	5181.5	(11)	3924.3	10 ⁺			
1275.5	3484.2	9 ⁻	2208.6	6 ⁺			
1302.8	7920.2	(16 ⁺)	6617.5				
1310.4 [#]	3519.1	(7 ⁺)	2208.6	6 ⁺			
1334.5 ^c	5258.7	(13 ⁻)	3924.3	10 ⁺			
1346.4	6605.1		5258.7	(13 ⁻)			
1395.5	8524.3	(18 ⁺)	7128.7	(16 ⁺)			
1438.6	7183.3		5744.8	(14 ⁻)			
1496.1	8151.5		6655.3	(15 ⁺)			
1501.3	4985.5	(11 ⁻)	3484.2	9 ⁻			
1575.3	1575.3	2 ⁺	0.0	0 ⁺			
1602.5	5086.7	(11 ⁻)	3484.2	9 ⁻			
1654.3	7121.9		5467.4	(13 ⁻)			
1655.0	7900.7		6245.7	(14 ⁺)			
1657.3	7402.1		5744.8	(14 ⁻)			
1674.4	7920.2	(16 ⁺)	6245.7	(14 ⁺)			
1716.0	7183.3		5467.4	(13 ⁻)			
1737.4	7183.3		5445.9				
1863.3	7121.9		5258.7	(13 ⁻)			
1924.4	7183.3		5258.7	(13 ⁻)			

[†] Additional information 1.[‡] From 1988Wi06, except where noted otherwise.[#] From 1987Pr09.[@] From the level energies. $E_\gamma=225.8$ in the figure of 1988Wi06 is probably a misprint.[&] From $\gamma(\theta)$, $\gamma(\text{pol})$ (1988Wi06).^a From level energies; value of 1259.1 presented in 1988Wi06 is probably a misprint.^b From $\gamma(\theta)$, $\gamma(\text{pol})$ (1987Pr09).^c Suggested placement requires it to be an E3.^d Placement of transition in the level scheme is uncertain.

(HI,xn γ) 1987Pr09,1988Wi06Level Scheme $^{142}\text{Nd}_{82}$

(HI,xn γ) 1987Pr09,1988Wi06

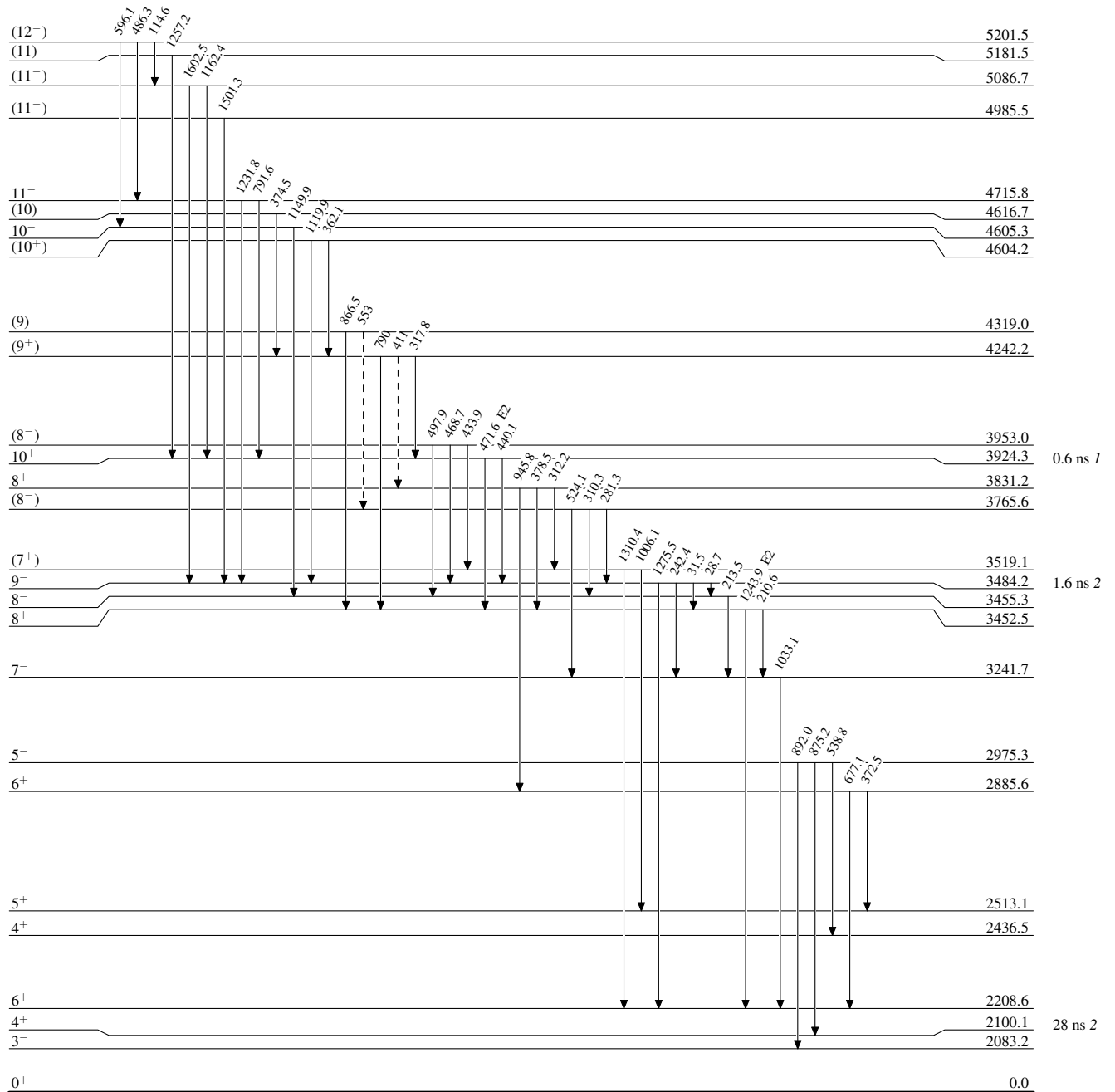
Level Scheme (continued)



$^{142}\text{Nd}_{82}$

(HL,xn γ) 1987Pr09,1988Wi06

Legend

Level Scheme (continued)----- \blacktriangleright γ Decay (Uncertain) $^{142}\text{Nd}_{82}$

(HI,xn γ) 1987Pr09,1988Wi06Level Scheme (continued)