<div align="center">

^{208}**Pb(^{14}C,α2nγ),(^{18}O,2α2nγ)**   **2006De09,1987Co11**

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Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	C. Morse	NDS 209,409 (2026)	5-Aug-2025

2006De09: ^{208}Pb(^{18}O,2α2nγ), E=91-93 MeV. Measured E$_\gamma$, I$_\gamma$, $\gamma\gamma$, $\alpha\gamma\gamma$ coin, $\gamma(\theta)$, DCO using 8π GASP-ISIS spectrometer,
the ISIS array contained 40 telescopic ΔE-E particle detectors.

1987Co11: ^{208}Pb(^{14}C,α2nγ), E=67-68 MeV; measured: $\gamma\gamma$, γX-ray, $\gamma(\theta)$. HPGe, Ge(Li), planar Ge detectors,
Compton-suppressed spectrometer.

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^{216}Rn Levels

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E(level)[&]	J$^{\pi}$[†]	Comments
0.0[‡]	0$^+$	
461.40[‡] 20	2$^+$	
840.5[‡] 3	4$^+$	
1225.9[‡] 4	6$^+$	
1645.0[‡] 4	8$^+$	
1785.7 4		
1837.5 5	(8$^+$,9$^+$,10$^+$)	E(level): The 102.2- and 192.5-keV γ rays are in cascade from a 1939.7-keV 10$^+$ level, through a level at either 1747.2 or 1837.5 keV, to the 1645.0-keV state.
1932.0 5		
1939.7 5	10$^+$	configuration=πh$^4_{9/2}\nu$g$^3_{9/2}\nu$i$_{11/2}$ (2006De09).
2342.5 5		
2405.6[#] 5	12$^+$	
2598.3[@] 5	13$^-$	
2826.1[#] 5	14$^+$	
2965.4 6		
3072.1[@] 6	15$^-$	
3238.3[#] 6	16$^+$	
3469.4[@] 6	17$^-$	
3572.4[#] 6	18$^+$	
3779.7[@] 6	19$^-$	
4071.8[#] 6		
4300.2[@] 6		

[†] Authors′ values, based on measured anisotropy ratios and deduced band structure.
[‡] Band(A): Ground-state band.
[#] Band(B): 12$^+$ band.
[@] Band(C): 13$^-$ band.
[&] From a least-squares fit to E$_\gamma$.

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γ(^{216}Rn)

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All γ-ray data are from 2006De09, with the exception of A$_2$, A$_4$ coefficients from 1987Co11.
R(anisotropy)=anisotropy ratio defined as the intensity ratio of transitions observed in the 32°/148° detector rings to those detected
in the 90° ring. 2006De09 does not give expected anisotropy values for dipole or quadrupole states, but the values assigned as E2
in that work cluster in the range 1.04-1.26; the states assigned as E1 cluster in the range 0.59-0.7.

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Continued on next page (footnotes at end of table)

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$^{208}\text{Pb}(^{14}\text{C},\alpha 2n\gamma),(^{18}\text{O},2\alpha 2n\gamma)$ **2006De09,1987Co11 (continued)**

$\gamma(^{216}\text{Rn})$ (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[@]	Comments
102.2[‡] 2	2.4 4	1939.7	10^+	1837.5	$(8^+,9^+,10^+)$	$(E2)$[#]	7.62 13	$\alpha(K)=0.331$ 5; $\alpha(L)=5.38$ 9; $\alpha(M)=1.450$ 24; $\alpha(N)=0.377$ 6; $\alpha(O)=0.0761$ 13; $\alpha(P)=0.00844$ 14
166.1 2	2.7 4	3238.3	16^+	3072.1	15^-	E1	0.1350 19	$\alpha(K)=0.1077$ 15; $\alpha(L)=0.02082$ 30; $\alpha(M)=0.00496$ 7; $\alpha(N)=0.001277$ 18; $\alpha(O)=0.000270$ 4 $\alpha(P)=3.59\times10^{-5}$ 5
^{x}185.6 2	≤1							
192.5[‡] 2	9.2 16	1837.5	$(8^+,9^+,10^+)$	1645.0	8^+	$(E2)$[#]	0.600 9	$\alpha(K)=0.1779$ 25; $\alpha(L)=0.312$ 5; $\alpha(M)=0.0835$ 12; $\alpha(N)=0.02173$ 32; $\alpha(O)=0.00442$ 6 $\alpha(P)=0.000507$ 7
192.7 2	25.6 38	2598.3	13^-	2405.6	12^+	E1[#]	0.0942 13	$\alpha(K)=0.0754$ 11; $\alpha(L)=0.01424$ 20; $\alpha(M)=0.00339$ 5; $\alpha(N)=0.000873$ 12 $\alpha(O)=0.0001853$ 26; $\alpha(P)=2.488\times10^{-5}$ 35 R(anisotropy)=0.60 10 for 192.7 and 192.5.
207.5 2	4.1 9	3779.7	19^-	3572.4	18^+	E1	0.0788 11	$\alpha(K)=0.0633$ 9; $\alpha(L)=0.01181$ 17; $\alpha(M)=0.00281$ 4; $\alpha(N)=0.000724$ 10; $\alpha(O)=0.0001539$ 22 $\alpha(P)=2.077\times10^{-5}$ 29 R(anisotropy)=0.70 11.
227.9 2	7.8 9	2826.1	14^+	2598.3	13^-	E1[#]	0.0630 9	$\alpha(K)=0.0507$ 7; $\alpha(L)=0.00935$ 13; $\alpha(M)=0.002218$ 31; $\alpha(N)=0.000573$ 8 $\alpha(O)=0.0001220$ 17; $\alpha(P)=1.655\times10^{-5}$ 23
231.2 2	15.8 11	3469.4	17^-	3238.3	16^+	E1	0.0609 9	$\alpha(K)=0.0490$ 7; $\alpha(L)=0.00902$ 13; $\alpha(M)=0.002140$ 30; $\alpha(N)=0.000552$ 8 $\alpha(O)=0.0001177$ 17; $\alpha(P)=1.599\times10^{-5}$ 23 R(anisotropy)=0.59 10.
246.0 2	11.7 10	3072.1	15^-	2826.1	14^+	E1[#]	0.0526 7	$\alpha(K)=0.0424$ 6; $\alpha(L)=0.00774$ 11; $\alpha(M)=0.001835$ 26; $\alpha(N)=0.000474$ 7 $\alpha(O)=0.0001011$ 14; $\alpha(P)=1.379\times10^{-5}$ 19 R(anisotropy)=0.69 11.
287.0 2	7.0 20	1932.0		1645.0	8^+			
292.7 2	6.0 12	4071.8		3779.7	19^-			
294.7 2	43.1 36	1939.7	10^+	1645.0	8^+	E2[#]	0.1456 21	$\alpha(K)=0.0716$ 10; $\alpha(L)=0.0549$ 8; $\alpha(M)=0.01445$ 21; $\alpha(N)=0.00376$ 5; $\alpha(O)=0.000774$ 11 $\alpha(P)=9.26\times10^{-5}$ 13 R(anisotropy)=1.16 26.
310.5 2	23.3 30	3779.7	19^-	3469.4	17^-	E2	0.1246 18	$\alpha(K)=0.0640$ 9; $\alpha(L)=0.0450$ 6;

Continued on next page (footnotes at end of table)

^{208}Pb(^{14}C,α2nγ),(^{18}O,2α2nγ)　　**2006De09,1987Co11 (continued)**

γ(^{216}Rn) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[@]	Comments
								α(M)=0.01180 *17*; α(N)=0.00307 *4*; α(O)=0.000633 *9* α(P)=7.63×10^{-5} *11* R(anisotropy)=1.26 *22*.
333.9 *2*	7.0 *14*	3572.4	18$^+$	3238.3	16$^+$	E2[#]	0.1008 *14*	α(K)=0.0547 *8*; α(L)=0.0343 *5*; α(M)=0.00896 *13*; α(N)=0.002333 *33*; α(O)=0.000482 *7* α(P)=5.86×10^{-5} *8*
379.1 *2*	96.8 *42*	840.5	4$^+$	461.40	2$^+$	E2	0.0709 *10*	α(K)=0.0417 *6*; α(L)=0.02170 *31*; α(M)=0.00562 *8*; α(N)=0.001464 *21*; α(O)=0.000304 *4* α(P)=3.76×10^{-5} *5* R(anisotropy)=1.04 *16*.
385.4 *2*	95.4 *61*	1225.9	6$^+$	840.5	4$^+$	E2	0.0678 *10*	A$_2$=0.27 *6* (1987Co11); A$_4$=−0.11 *14* (1987Co11) α(K)=0.0403 *6*; α(L)=0.02048 *29*; α(M)=0.00530 *7*; α(N)=0.001381 *19*; α(O)=0.000287 *4* α(P)=3.55×10^{-5} *5* R(anisotropy)=1.13 *21*.
397.4 *2*	17.0 *21*	3469.4	17$^-$	3072.1	15$^-$	E2	0.0625 *9*	α(K)=0.0378 *5*; α(L)=0.01841 *26*; α(M)=0.00475 *7*; α(N)=0.001238 *17*; α(O)=0.000257 *4* α(P)=3.20×10^{-5} *5* R(anisotropy)=1.18 *17*.
410.5 *2*	6.0 *20*	2342.5		1932.0				
412.1 *2*	36.6 *30*	3238.3	16$^+$	2826.1	14$^+$	E2	0.0568 *8*	α(K)=0.0351 *5*; α(L)=0.01625 *23*; α(M)=0.00419 *6*; α(N)=0.001091 *15*; α(O)=0.0002270 *32* α(P)=2.84×10^{-5} *4* R(anisotropy)=1.12 *16*.
419.1 *2*	94.5 *64*	1645.0	8$^+$	1225.9	6$^+$	E2	0.0544 *8*	α(K)=0.0338 *5*; α(L)=0.01535 *22*; α(M)=0.00395 *6*; α(N)=0.001029 *15*; α(O)=0.0002143 *30* α(P)=2.69×10^{-5} *4* R(anisotropy)=1.18 *20*.
420.5 *2*	42.4 *51*	2826.1	14$^+$	2405.6	12$^+$	E2	0.0540 *8*	α(K)=0.0336 *5*; α(L)=0.01518 *21*; α(M)=0.00391 *6*; α(N)=0.001017 *14*; α(O)=0.0002119 *30* α(P)=2.66×10^{-5} *4* R(anisotropy)=1.16 *23*.
461.4 *2*	100 *4*	461.40	2$^+$	0.0	0$^+$	E2	0.0427 *6*	A$_2$=0.10 *4* (1987Co11); A$_4$=−0.08 *9* (1987Co11) α(K)=0.0278 *4*; α(L)=0.01116 *16*; α(M)=0.00285 *4*; α(N)=0.000743 *10*; α(O)=0.0001554 *22* α(P)=1.974×10^{-5} *28* R(anisotropy)=1.12 *16*.
465.9 *2*	70.4 *36*	2405.6	12$^+$	1939.7	10$^+$	E2	0.0417 *6*	α(K)=0.0272 *4*; α(L)=0.01082 *15*; α(M)=0.00276 *4*; α(N)=0.000720 *10*; α(O)=0.0001505 *21* α(P)=1.915×10^{-5} *27* R(anisotropy)=1.26 *23*.
473.9 *2*	16.3 *21*	3072.1	15$^-$	2598.3	13$^-$	E2	0.0400 *6*	α(K)=0.0263 *4*; α(L)=0.01024 *14*; α(M)=0.00261 *4*; α(N)=0.000680 *10*; α(O)=0.0001424 *20* α(P)=1.816×10^{-5} *26*
498.9 *2*	4.3 *8*	4071.8		3572.4	18$^+$			
520.5 *2*	9.6 *19*	4300.2		3779.7	19$^-$			
559.8 *2*	3.0 *10*	1785.7		1225.9	6$^+$			
622.9 *2*	3.0 *10*	2965.4		2342.5				

[†] As reported in 2006De09.

[‡] The order of the 102.2 and 192.5 transitions can not be established from intensity balance. See the discussion for the 1837.5 level.

[#] Electric or magnetic character determined from intensity balance in coincidence spectra by 2006De09.

^{208}Pb(^{14}C,α2nγ),(^{18}O,2α2nγ)   **2006De09,1987Co11 (continued)**

γ(^{216}Rn) (continued)

[@] Additional information 1.
[x] γ ray not placed in level scheme.

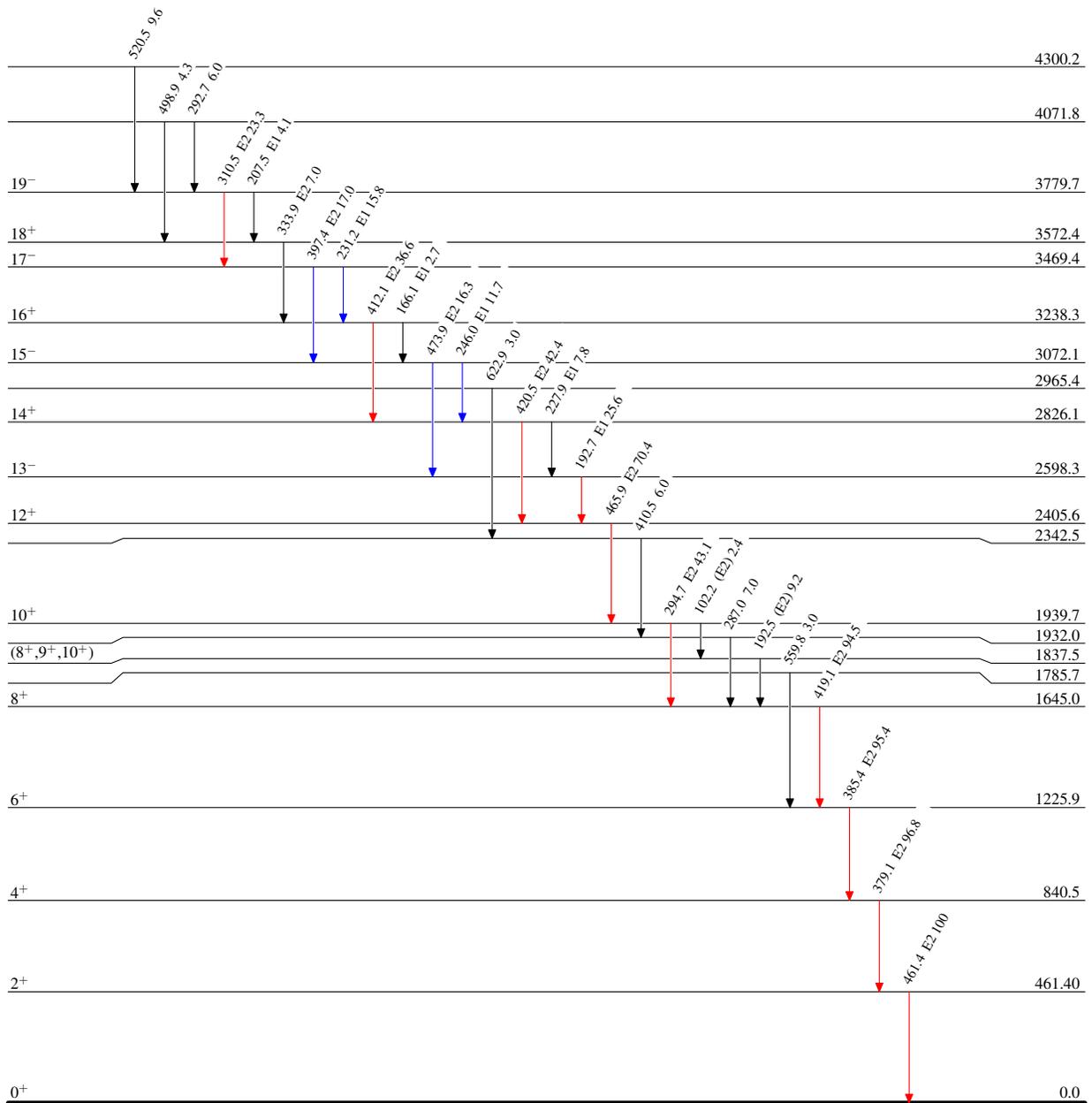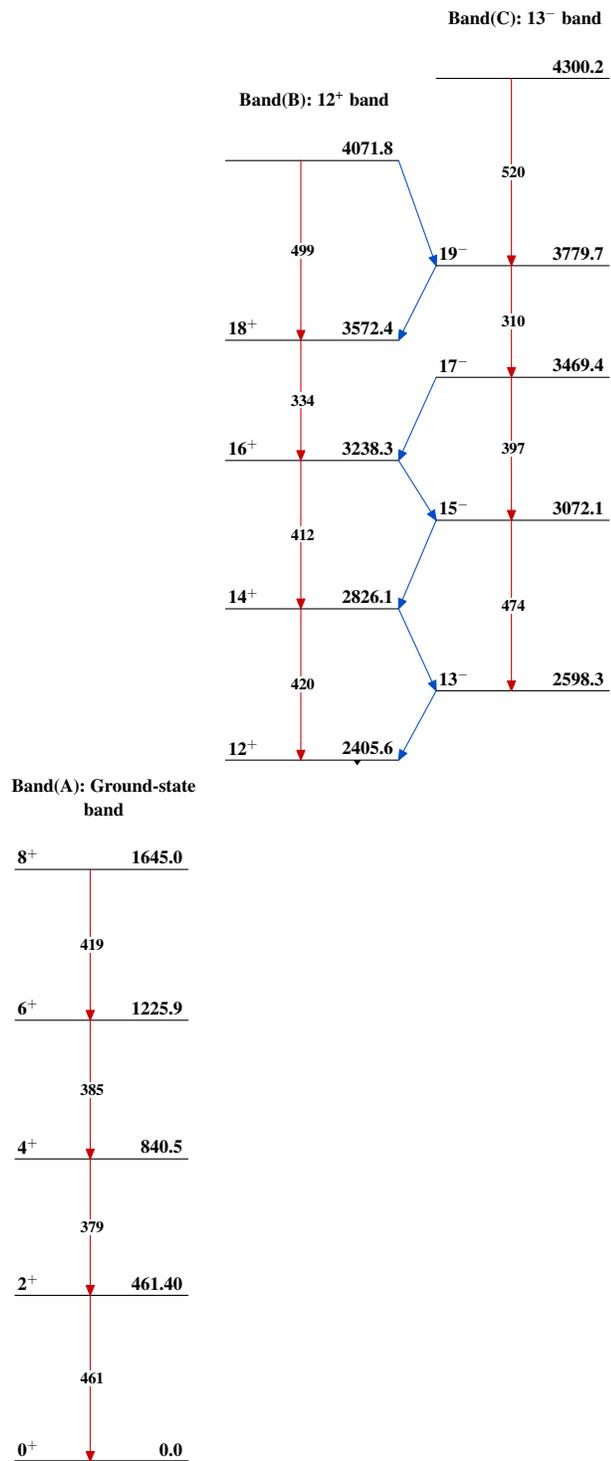^{208}Pb(^{14}C,α2nγ),(^{18}O,2α2nγ)   2006De09,1987Co11

Level Scheme

Intensities: Type not specified

Legend

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

$^{216}_{86}$Rn$_{130}$

^{208}Pb(^{14}C,α2nγ),(^{18}O,2α2nγ)   **2006De09,1987Co11**

Band(C): 13⁻ band

Band(B): 12⁺ band

4300.2

520

4071.8

499

19⁻   3779.7

18⁺   3572.4

310

334

17⁻   3469.4

16⁺   3238.3

397

412

15⁻   3072.1

14⁺   2826.1

474

420

13⁻   2598.3

12⁺   2405.6

Band(A): Ground-state band

8⁺   1645.0

419

6⁺   1225.9

385

4⁺   840.5

379

2⁺   461.40

461

0⁺   0.0

${}^{216}_{86}$Rn$_{130}$