^{18}N β^- decay

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Tilley, Weller, Cheves, Chasteler	NP A595, 1 (1995)	31-Oct-1994

Parent: ^{18}N: E=0; $J^\pi=1^-$; $T_{1/2}$=624 ms *12*; Q(β^-)=13899 *20*; %β^- decay=100.0

Branchings to γ decaying levels are from 1982Ol01. Branchings to α deacying levels are from 1989Zh04. Branchings to neutron decaying levels are from 1994Sc01. 12.2% 6 of the β decay branching ratios has been measured to feed α emitting states 1989Zh04. 14.3% 20 has been measured to feed neutron decaying states 1991Re02. The β branchings of γ decaying states (1982Ol01) have been renormalized to take these delayed particle branchings into account.

^{18}O Levels

E(level)	J^π	Comments
0	0^+	
1982.050 *90*	2^+	
3554.13 *80*	4^+	
3633.70 *11*		
3920.42 *14*	2^+	
4455.52 *10*	1^-	
5097.60 *60*	3^-	
5530.17 *32*	2^-	
6198.22 *40*	1^-	
6349.8 *10*	(2^-)	
6880.45 *27*	0^-	
7620	1^-	%α=100
7771.07 *50*	2^-	
8040	1^-	%α=100
9000	(1^-)	%α=100 Found as a broad bump at 3 MeV in β^- delayed α spectra. Origin unclear, can be several unresolved $J^\pi=1^-$ states or a new broad $J^\pi=1^-$ state in ^{18}O 1989Zh04.
9090 *30*	$(0,1,2)^-$	%n=100 Level uncertain.
9270 *20*	$(0,1,2)^-$	%n=100
9470 *20*	$(0,1,2)^-$	%n=100
9690 *20*	$(0,1,2)^-$	%n=100
9910 *20*	$(0,1,2)^-$	%n=100
10240 *30*	$(0,1,2)^-$	%n=100
10650 *30*	$(0,1,2)^-$	%n=100
10990 *30*	$(0,1,2)^-$	%n=100
11490 *30*	$(0,1,2)^-$	%n=100

β^- radiations

E(decay)	E(level)	Iβ^-[†‡]	Log *ft*	Comments
(2.41×10^3 *4*)	11490	0.19 *4*	4.85 *10*	av Eβ=1033 *18*
(2.91×10^3 *4*)	10990	0.13 *3*	5.38 *11*	av Eβ=1272 *18*
(3.25×10^3 *4*)	10650	0.43 *9*	5.07 *10*	av Eβ=1436 *18*
(3.66×10^3 *4*)	10240	0.16 *3*	5.73 *9*	av Eβ=1635 *18*
(3.99×10^3 *3*)	9910	0.17 *3*	5.87 *8*	av Eβ=1795 *14*
(4.21×10^3 *3*)	9690	0.14 *3*	6.06 *10*	av Eβ=1902 *14*
(4.43×10^3 *3*)	9470	0.47 *9*	5.64 *9*	av Eβ=2010 *14*
(4.63×10^3 *3*)	9270	0.39 *9*	5.80 *11*	av Eβ=2108 *14*
(4.81×10^3 *4*)	9090	0.16 *3*	6.27 *9*	av Eβ=2196 *18*
(4899 *20*)	9000	≥3.6	≤5.0	av Eβ=2240 *10*
(5859 *20*)	8040	1.8 *2*	5.61 *5*	av Eβ=2713 *10*

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^{18}N β^- decay (continued)

β^- radiations (continued)

E(decay)	E(level)	Iβ^-[†][‡]	Log *ft*	Comments
(6128 *20*)	7771.07	4.3 *4*	5.32 *5*	av Eβ=2845 *10*
(6279 *20*)	7620	6.8 *5*	5.17 *4*	av Eβ=2920 *10*
(7019 *20*)	6880.45	12.8 *7*	5.13 *3*	av Eβ=3284 *10*
(7549 *20*)	6349.8	1.9 *2*	6.10 *5*	av Eβ=3547 *10*
(7701 *20*)	6198.22	1.2 *2*	6.34 *8*	av Eβ=3622 *10*
(8369 *20*)	5530.17	2.7 *3*	6.16 *5*	av Eβ=3952 *10*
(8801 *20*)	5097.60	<0.4	>7.1	av Eβ=4166 *10*
(9443 *20*)	4455.52	47.2 *9*	5.167 *13*	av Eβ=4485 *10*
(9979 *20*)	3920.42	<0.4	>7.4	av Eβ=4750 *10*
(10265 *20*)	3633.70	<0.3	>7.5	av Eβ=4892 *10*
(10345 *20*)	3554.13	<0.5	>7.3	av Eβ=4931 *10*
(11917 *20*)	1982.050	3.4 *13*	6.79 *17*	av Eβ=5711 *10*

[†] Branchings do not add up to 100% since neutron decaying levels below 9.00 MeV were not measured by 1994Sc01 and there is a missing 12.1% to neutron decaying levels not listed.

[‡] Absolute intensity per 100 decays.

$\gamma(^{18}O)$

E$_\gamma$	I$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Comments
535.238 *50*	2.85 *14*	4455.52	1^-	3920.42	2^+	
682.24	<0.35	6880.45	0^-	6198.22	1^-	γ-ray not seen. Intensity deduced from adopted gammas table.
821.708 *90*	60.6 *18*	4455.52	1^-	3633.70		
901.37	<0.42	4455.52	1^-	3554.13	4^+	γ-ray not seen. Intensity deduced from adopted gammas table.
1074.77 *60*	0.80 *12*	5530.17	2^-	4455.52	1^-	
1177.33 *90*	0.42 *13*	5097.60	3^-	3920.42	2^+	
1350.25	<1.4	6880.45	0^-	5530.17	2^-	γ-ray not seen. Intensity deduced from adopted gammas table.
1543.40	0.10 *2*	5097.60	3^-	3554.13	4^+	γ-ray not seen. Intensity deduced from adopted gammas table.
1572.00 *80*	0.64 *13*	3554.13	4^+	1982.050	2^+	
1609.58 *90*	0.85 *34*	5530.17	2^-	3920.42	2^+	
1651.564 *70*	60.5 *18*	3633.70		1982.050	2^+	
1893.93 *95*	0.37 *6*	6349.8	(2^-)	4455.52	1^-	
1938.19 *15*	4.49 *14*	3920.42	2^+	1982.050	2^+	
1981.933 *90*	98.0 *20*	1982.050	2^+	0	0^+	
2424.78 *25*	17.53 *70*	6880.45	0^-	4455.52	1^-	
2429.67 *75*	1.41 *14*	6349.8	(2^-)	3920.42	2^+	
2473.03 *25*	20.4 *10*	4455.52	1^-	1982.050	2^+	
2672.96 *50*	1.63 *16*	7771.07	2^-	5097.60	3^-	
3114.50 *60*	0.92 *14*	5097.60	3^-	1982.050	2^+	
3315.13 *90*	0.63 *25*	7771.07	2^-	4455.52	1^-	
3547.70 *40*	2.01 *14*	5530.17	2^-	1982.050	2^+	
3633.31	0.18 *4*	3633.70		0	0^+	γ-ray not seen. Intensity deduced from adopted gammas table.
3920.10 *90*	0.65 *7*	3920.42	2^+	0	0^+	
4366.00 *80*	0.84 *21*	6349.8	(2^-)	1982.050	2^+	
4454.93	<0.85	4455.52	1^-	0	0^+	γ-ray not seen. Intensity deduced from adopted gammas table.
5788.50 *70*	3.58 *32*	7771.07	2^-	1982.050	2^+	
6197.07 *40*	1.40 *14*	6198.22	1^-	0	0^+	

[†] For absolute intensity per 100 decays, multiply by 0.735 *21*.

^{18}N β^- decay

Decay Scheme

Intensities: I_γ per 100 parent decays