^{21}N β^- decay:83 ms 2009Li51,2008Lo06

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	R. B. Firestone	NDS 127, 1 (2015)	15-Jan-2015

Parent: ^{21}N: E=0; $J^\pi=1/2^-$; $T_{1/2}$=84 ms *7*; Q(β^-)=17.19×10^3 *10*; %β^- decay=100.0

^{21}N-$T_{1/2}$: From 2009Li51, from β decay curves, several impurities were taken into account in the analysis of the decay curve. The authors′ value of 82.9 ms *75* is rounded here to 83 ms *8*. In 2008Lo06 the half-life was given as 82.9 ms *19* from neutron measurements.

^{21}N-Q(β^-): From 2003Au03, 2009AuZZ.

^{21}N-%β^- decay: %β^-=100, %β^-n=90.5 *42* (2009Li51).

^{21}N beam produced in the reaction ^{9}Be(^{26}Mg,X), E=68.8 MeV/nucleon at RIBLL, HIRFL facility in Lanzhou. The ^{21}N fragments were separated and stopped in an implantation detector. Energy loss and time-of-flight information used to identify incoming particles. Measured neutrons, β, γ-rays in singles and coincidence (βn, $\beta\gamma$, $\beta\gamma$n) modes using neutron wall and neutron ball for neutrons, NE102 plastic scintillators for β particles and four segmented Clover HPGe detectors for γ-rays. Deduced Gamow-Teller strengths. Comparison with shell-model calculations.

Energetically possible β-delayed two neutron emission was looked for by the detection of 1356γ in ^{19}F. A small γ-ray peak seen at this energy is attributed to the β-delayed neutron decay of ^{20}N in the beam-off period.

^{21}O Levels

E(level)	J^π	Comments
0	$5/2^+$	
1222 *3*	$1/2^+$	
6.14×10^3 *8*	$(1/2^-,3/2^-)$	E(level): From En(lab)=2220 *80* (2009Li51), S(n)=3806 *12* (2009AuZZ,2003Au03).
6.80×10^3 *10*	$(1/2^-,3/2^-)$	E(level): From En(lab)=2850 *100* (2009Li51), S(n)=3806 *12* (2009AuZZ,2003Au03).
6.91×10^3 *7*	$(1/2^-,3/2^-)$	E(level): From En(lab)=1360 *70* (2009Li51), S(n)=3806 *12* (2009AuZZ,2003Au03).
9.02×10^3 *12*	$(1/2^-,3/2^-)$	E(level): From En(lab)=3370 *120* (2009Li51), S(n)=3806 *12* (2009AuZZ,2003Au03).
9.04×10^3 *22*	$(1/2^-,3/2^-)$	E(level): From En(lab)=4980 *220* (2009Li51), S(n)=3806 *12* (2009AuZZ,2003Au03).

β^- radiations

E(decay)	E(level)	Iβ^-[‡]	Log *ft*[†]	Comments
(8.15×10^3 *24*)	9040	9.9 *11*	4.7	av Eβ=3.84×10^3 *12*
(8.17×10^3 *16*)	9020	6.9 *8*	4.8	av Eβ=3853 *78*
(1.028×10^4 *12*)	6910	4.5 *6*	5.5	av Eβ=4899 *61*
(1.039×10^4 *14*)	6800	8.4 *9*	5.2	av Eβ=4953 *70*
(1.105×10^4 *13*)	6140	6.3 *7*	5.5	av Eβ=5280 *64*
(1.597×10^4 *10*)	1222	3.5 *4*	6.5	av Eβ=7717 *50*
(1.719×10^4[#] *10*)	0	<0.02	>9[1u]	av Eβ=8338 *50* Iβ^-: Assuming second-forbidden unique transition with log *ft*>9.

[†] Deduced by the compiler using log *ft* code at www.nndc.bnl.gov. Values are slightly higher than the ones in 2009Li51.

[‡] Absolute intensity per 100 decays.

[#] Existence of this branch is questionable.

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$\gamma(^{21}O)$

E_γ	I_γ †	E_i(level)	J_i^π	E_f	J_f^π
1222 *3*	3.5 *4*	1222	1/2$^+$	0	5/2$^+$

† Absolute intensity per 100 decays.

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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays