^{22}N β^- decay 2010Su03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 127, 69(2015)	1-Apr-2015

Parent: ^{22}N: E=0.0; $J^\pi=(0^-)$; $T_{1/2}$=24 ms *3*; Q(β^-)=2.276×10^4 *20*; %β^- decay=100.0

^{22}N beam was produced by fragmentation of a E=140 MeV/nucleon ^{48}Ca primary beam on a Be target and separated by A1900 fragment separator at NSCL facility. The secondary beam containing ^{22}N was implanted on a thin plastic implantation detector. Measured Eγ, Iγ, β, $\beta\gamma$ coin, β-delayed neutrons, β(n) coin, and half-life using an array of sixteen neutron detectors and eight detectors from the Segmented Germanium Array (SeGA). Deduced level scheme of ^{22}O.

^{22}O Levels

E(level)[†]	J^π[#]	Comments
0.0	0^+	
3198 *8*	2^+	J^π: From Adopted Levels.
4584 *9*	(3^+)	
6511 *10*	(2^+)	
7649[‡]	$(0^-,1^-,2^-)$	
8783[‡]	$(0^-,1^-,2^-)$	
10554[‡]	$(0^-,1^-,2^-)$	E(level): 10545 in Fig. 7 and on page 5 (column one) is a typo.
13298[‡]	$(0^-,1^-,2^-)$	

[†] From Eγ's.
[‡] Level decays by neutrons.
[#] From comparison with shell model calculations (2010Su03), except otherwise noted.

β^- radiations

E(decay)	E(level)	Iβ^-[†‡]	Log *ft*	Comments
(9.46×10^3 *20*)	13298	9.6 *16*	4.4 *1*	av Eβ=4493 *99*
(1.221×10^4 *20*)	10554	6.6 *7*	5.1 *1*	av Eβ=5850 *100*
(1.398×10^4 *20*)	8783	13 *1*	5.1 *1*	av Eβ=6731 *99*
(1.511×10^4 *20*)	7649	12 *3*	5.3 *1*	av Eβ=7292 *99*
(1.625×10^4 *20*)	6511	2 *1*	6.2 *2*	av Eβ=7860 *100*
(1.818×10^4 *20*)	4584	7 *3*	5.9 *2*	av Eβ=8809 *99*
(1.956×10^4 *20*)	3198	15 *3*	5.8 *1*	av Eβ=9494 *99*
(2.276×10^4 *20*)	0.0	<31.6	>5.8	av Eβ=11073 *99*

[†] From 2010Su03, calculated based on the shell model.
[‡] Absolute intensity per 100 decays.

$\gamma(^{22}O)$

Eγ	Iγ[†]	E$_i$(level)	J^π_i	E$_f$	J^π_f
1386 *4*	7 *3*	4584	(3^+)	3198	2^+
3198 *8*	24 *3*	3198	2^+	0.0	0^+
3312 *5*	2.0 *10*	6511	(2^+)	3198	2^+

[†] Absolute intensity per 100 decays.

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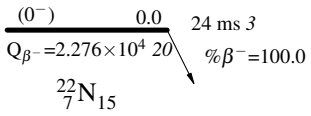
Decay Scheme

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

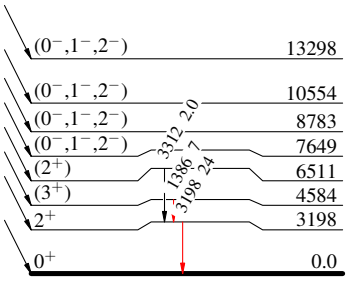
Legend

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



$^{22}_{7}N_{15}$

Iβ⁻	Log *ft*
9.6	4.4
6.6	5.1
13	5.1
12	5.3
2	6.2
7	5.9
15	5.8
<31.6	>5.8



$^{22}_{8}O_{14}$