^{28}Ne β^- decay 2006Tr02,2005Tr05,1999Re16

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 114, 1189 (2013)	1-Apr-2013

Parent: ^{28}Ne: E=0.0; $J^\pi=0^+$; $T_{1/2}$=20 ms *1*; Q(β^-)=12.28×10^3 *10*; %β^- decay=100.0

Sum of decay energies of this dataset is 12041 keV *463* cf. 12280 keV *10* obtained from ^{28}Ne β^- decay Q(g.s.) and branching.

2006Tr02,2005Tr05: ^{28}Ne isotope was produced from fragmentation of ^{48}Ca beam on a Be target, E=140 MeV/nucleon at NSCL; Fragments were separated by A1900 fragment separator and identified by energy loss in a ΔE-E detector and time of flight; Detector: double sided Si microstrip detector (DSSD), SeGA array of 12 HPGe detectors, β^- counting system (BCS); Measured Eγ, Eβ, Iγ, Iβ, $\beta^-\gamma\gamma$ coin.

1999Re16: ^{28}Ne was produced by Ta(^{36}S,X), E(^{36}S)=2.8 GeV, reaction; Magnetic Spectrometer (LISE3); nuclides were identified by TOF and energy loss in Si; Detector: 6 Si, 4 HPGe and 42 ^{3}He proportional counters; Measured: Eγ, Iγ, $\beta\gamma$ coin, t, β^-n.

All data are from 2006Tr02, unless otherwise stated.

^{28}Na Levels

E(level)†	J^π	Comments
0.0	1^+	J^π: From Adopted Levels.
55.2 *5*		J^π: (2^+) predicted by shell-model calculations.
1131.2 *7*		
1254.2 *6*	(2^+)	J^π: From Adopted Levels.
1932.2 *7*	(1^+)‡	J^π: From log *ft*=5.3.
2118.4 *5*	(1^+)	J^π: From strong β feeding to this state (2006Tr02).
2714.3 *6*	(1^+)	J^π: From strong β feeding to this state (2006Tr02).
3286.4 *12*	(1^+)‡	J^π: From log *ft*=5.2.
3512.5 *12*	(1^+)‡	J^π: log *ft*=5.3.
>3543		
>10270		

† From a least-squares fit to γ-ray energies, ΔE_γ=1 keV is assumed by the evaluator.

‡ Assigned by the evaluator from log *ft* values.

β^- radiations

E(decay)	E(level)	Iβ^-†‡	Log *ft*	Comments
(2.01×10^3 *10*)	>10270	3.7 *5*	<1.7	av Eβ=817 *71* Iβ^-: total β^- feeding to states above S(2n)(^{28}Na)=10270.
(8.74×10^3 *10*)	>3543	12 *1*	<4.1	av Eβ=4103 *75* Iβ^-: total β^- feeding to states above S(n)(^{28}Na)=3542.
(8.77×10^3 *10*)	3512.5	0.9 *2*	5.3 *1*	av Eβ=4143 *50*
(8.99×10^3 *10*)	3286.4	1.3 *3*	5.2 *1*	av Eβ=4254 *50*
(9.57×10^3 *10*)	2714.3	8.5 *6*	4.5 *1*	av Eβ=4537 *50*
(1.016×10^4 *10*)	2118.4	20.1 *12*	4.2 *1*	av Eβ=4832 *50*
(1.035×10^4 *10*)	1932.2	1.7 *4*	5.3 *1*	av Eβ=4924 *50*
(1.103×10^4 *10*)	1254.2	<0.5	>6.0	av Eβ=5260 *50*
(1.115×10^4 *10*)	1131.2	<0.5	>6.0	av Eβ=5320 *50*
(1.222×10^4 *10*)	55.2	<2	>5.6	av Eβ=5853 *50*
(1.228×10^4 *10*)	0.0	55 *5*	4.2 *1*	av Eβ=5880 *50*

† From γ-ray intensity balance to each level and the total number of β^-correlated decay events obtained from a fit to decay curves (2006Tr02).

‡ Absolute intensity per 100 decays.

^{28}Ne β^- decay 2006Tr02,2005Tr05,1999Re16 (continued)

$\gamma(^{28}Na)$

Iγ normalization: From 2006Tr02.

E_γ	I_γ[†][‡]	E_i(level)	J_i^π	E_f	J_f^π	Comments
55	14.6 *15*	55.2		0.0	1^+	
596	1.29 *16*	2714.3	(1^+)	2118.4	(1^+)	
782	1.68 *20*	2714.3	(1^+)	1932.2	(1^+)	
864.5 *4*	4.4 *4*	2118.4	(1^+)	1254.2	(2^+)	E_γ: From 1999Re16. Other: 863 keV (2006Tr02). The γ ray is placed from a 2927 keV level ($J^\pi=1^+$) in 1999Re16.
1076	1.41 *20*	1131.2		55.2		
1131	1.28 *19*	1131.2		0.0	1^+	
1200	1.23 *19*	1254.2	(2^+)	55.2		
1255	3.2 *3*	1254.2	(2^+)	0.0	1^+	
1459[#]		2714.3	(1^+)	1254.2	(2^+)	
1583	2.35 *30*	2714.3	(1^+)	1131.2		
1877	1.8 *3*	1932.2	(1^+)	55.2		
1932	1.58 *25*	1932.2	(1^+)	0.0	1^+	
2062.9 *3*	15.6 *11*	2118.4	(1^+)	55.2		E_γ: From 1999Re16. The γ ray is placed from a 2063 keV level ($J^\pi=1^+$) in 1999Re16. Other: 2063 keV (2006Tr02).
2118	1.34 *24*	2118.4	(1^+)	0.0	1^+	
2659	1.29 *25*	2714.3	(1^+)	55.2		
2714	1.9 *3*	2714.3	(1^+)	0.0	1^+	
3231	1.26 *27*	3286.4	(1^+)	55.2		
3457	0.94 *23*	3512.5	(1^+)	55.2		

[†] Based on a private communication (via e-mail) between XUNDL compiler and V. Tripathi, dated May 9, 2006.
[‡] Absolute intensity per 100 decays.
[#] Placement of transition in the level scheme is uncertain.

^{28}Ne β^- decay 2006Tr02,2005Tr05,1999Re16

Decay Scheme

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

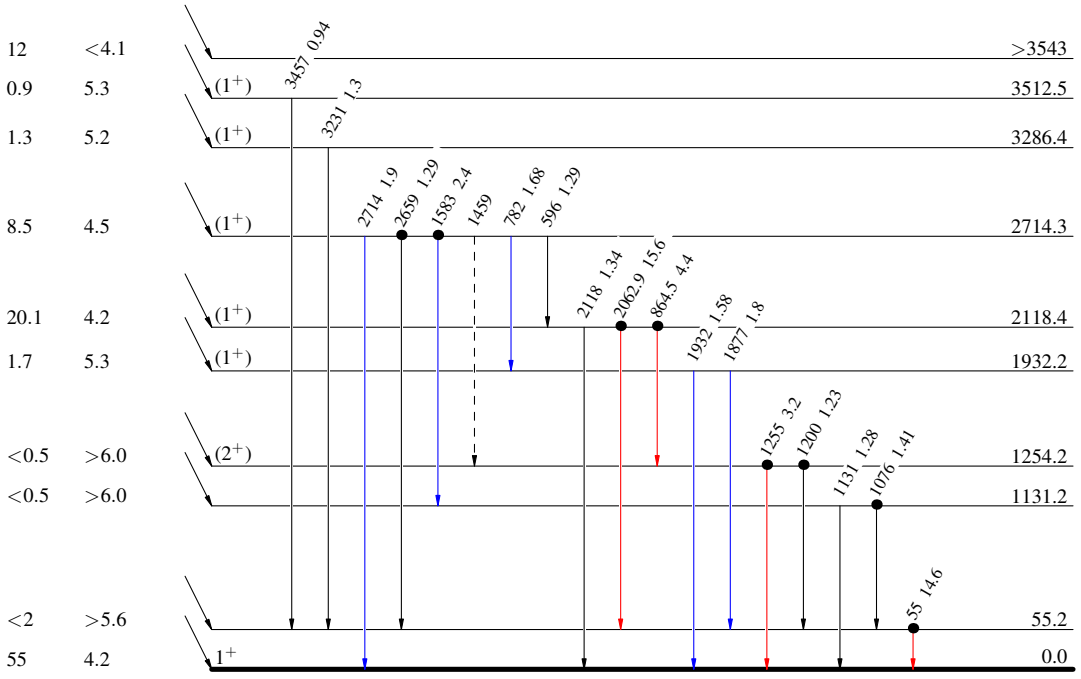
Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)
- Coincidence

0^+ 0.0 20 ms *1*

Q_{β^-}=12.28×10^3 *10* $\%\beta^-$=100.0

$^{28}_{10}Ne_{18}$

Iβ⁻	Log *ft*	
3.7	<1.7	>10270
12	<4.1	>3543
0.9	5.3	3512.5
1.3	5.2	3286.4
8.5	4.5	2714.3
20.1	4.2	2118.4
1.7	5.3	1932.2
<0.5	>6.0	1254.2
<0.5	>6.0	1131.2
<2	>5.6	55.2
55	4.2	0.0



$^{28}_{11}Na_{17}$