^{30}Ne β^- decay 2007Tr08,1999Re16

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia, A. Chakraborty	NDS 197,1 (2024)	31-May-2024

Parent: ^{30}Ne: E=0; $J^\pi=0^+$; $T_{1/2}$=7.18 ms *22*; Q(β^-)=1.481×10^4 *25*; %β^- decay=100

^{30}Ne-Q(β^-): from 2021Wa16.

Other: 2008TrZW.

2007Tr08,2008TrZW: ^{30}Ne was produced by bombarding 140 MeV/nucleon ^{48}Ca beam on beryllium target at NSCL; identified by a combination of energy loss and time-of-flight; Beta Counting System and Double-sided Si micro-Strip Detector used to detect high-energy fragments and the subsequent decay products; SeGA array consisting of 16 HPGe detectors; Measured: Eγ, Iγ, fragment-β-γ-γ coin.

1999Re16: ^{30}Ne was produced by bombarding 2.8 GeV ^{36}S beam on Ta target at GANIL; Identified by time-of-flight and energy loss; Measured β-γ coincidence.

^{30}Na Levels

E(level)[†]	J^π[‡]	$T_{1/2}$[‡]	Comments
0	2^+	45.4 ms *11*	
150.62 *20*	1^+	≈347 ps	
516.1 *5*	(2^+)		J^π: from shell model calculations (2007Tr08).
926.0 *6*	1^+		
2113.6 *6*	1^+		

† From a least-squares fit to the γ-ray energies.

‡ From Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-[†‡]	Log *ft*	Comments
(1.270×10^4 *25*)	2113.6	14.0 *18*	4.40 *7*	av Eβ=6.09×10^3 *13*
(1.388×10^4 *25*)	926.0	7.7 *12*	4.85 *8*	av Eβ=6.67×10^3 *13*
(1.466×10^4 *25*)	150.62	63 *11*	4.05 *9*	av Eβ=7.05×10^3 *13*

† From γ-ray intensity balance at each level deduced using the GTOL code by evaluators.

‡ Absolute intensity per 100 decays.

γ(^{30}Na)

E$_\gamma$[†]	I$_\gamma$[†‡]	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.	α[#]	Comments
150.6 *2*	78 *10*	150.62	1^+	0	2^+	[M1+E2]	0.006 *6*	α(K)=0.006 *5*; α(L)=3.5×10^{-4} *31*; α(M)=8.E−6 *7* Eγ: from 1999Re16. Iγ=95 *10* (1999Re16).
365.5 *5*	9 *2*	516.1	(2^+)	150.62	1^+	[M1+E2]		
410.0 *5*	6.3 *10*	926.0	1^+	516.1	(2^+)	[M1+E2]		
775 *1*	1.4 *5*	926.0	1^+	150.62	1^+			
1597 *1*	5 *1*	2113.6	1^+	516.1	(2^+)			
1963 *1*	5 *1*	2113.6	1^+	150.62	1^+			
2114 *1*	4 *1*	2113.6	1^+	0	2^+			

† From 2007Tr08, except otherwise noted. Eγ, Iγ uncertainty: from a private communication to the first author of 2007Tr08 (September 26, 2007).

‡ Absolute intensity per 100 decays.

Continued on next page (footnotes at end of table)

^{30}Ne β^- decay 2007Tr08,1999Re16 (continued)

$\gamma(^{30}Na)$ (continued)

[#] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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Decay Scheme

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