

^{24}Ne β^- decay (3.38 min) 1974AI03,1969Mc12,1968As05

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia, Anagha Chakraborty		NDS 186, 2 (2022)	31-Mar-2022

Parent: ^{24}Ne : $E=0$; $J^\pi=0^+$; $T_{1/2}=3.38$ min 2; $Q(\beta^-)=2466.3$ 5; $\% \beta^-$ decay=100.0

^{24}Ne - $T_{1/2}$: From ^{24}Ne Adopted Levels.

^{24}Ne - $Q(\beta^-)$: From 2021Wa16.

Other: 1956Dr11.

1974AI03: ^{24}Ne was formed by bombarding a neon target with 3-MeV tritons, $^{22}\text{Ne}(t,p)$ $E=3.2$ MeV. Ge(Li) and plastic scintillator detectors were used to detect γ and β rays. Measured E_γ , I_γ , half-life; deduce β branching, $\log ft$. The counting cell internal dimensions of 7.5 cm (diameter) by 2 cm (height).

1969Mc12: The β^- decay of ^{24}Ne was studied by observing the delayed γ -ray spectrum with the aid of a Ge(Li) detector. The parent nucleus, ^{24}Ne was produced by the $^{22}\text{Ne}(t,p)$ reaction at an incident bombarding energy of 2.5 MeV. 99% enriched target. Measured E_γ , I_γ .

1968As05: ^{24}Ne was produced from $^{22}\text{Ne}(t,p)$, $E=3$ MeV. 3 cc and 9 cc Ge(Li) detectors. Measured E_γ and showed that the 1^+ state at 1347 keV was populated, between the closely spaced level at 1341 keV.

1956Dr11: ^{24}Ne was produced from $^{22}\text{Ne}(t,p)$, $E=1.83$ MeV. Detectors: β scintillator of Pilot plastic phosphor and NaI(Tl). Measured E_γ , I_γ , $E\beta$, $I\beta$, etc. Deduced $\log ft$, $T_{1/2}$.

 ^{24}Na Levels

E(level) [†]	J^π [‡]	$T_{1/2}$ [‡]	Comments
0	4^+	14.956 h 3	
472.2073 14	1^+	20.18 ms 10	$T_{1/2}$: Other: 5 ms < $T_{1/2}$ < 50 ms and a most probable value of 20 ms (1956Dr11), based on deposition of ^{24}Na ions on electrode, separation of parent, counting, etc.
1346.64 3	1^+	4.4 ps 3	

[†] From E_γ .

[‡] From Adopted Levels.

 β^- radiations

E(decay)	E(level)	$I\beta^-$ [†]	$\log ft$	Comments
(1119.7 5)	1346.64	7.9 2	4.400 12	av $E\beta=434.38$ 50
(1994.1 5)	472.2073	92.1 2	4.364 3	av $E\beta=833.46$ 24

[†] Absolute intensity per 100 decays.

 $\gamma(^{24}\text{Na})$

E_γ [‡]	I_γ ^{†@}	E_i (level)	J_i^π	E_f	J_f^π	Mult.	$\alpha^\#$	Comments
472.2023 14	100.0 2	472.2073	1^+	0	4^+	[M3]	4.69×10^{-4}	$\alpha(K)=0.000442$ 7; $\alpha(L)=2.67 \times 10^{-5}$ 4; $\alpha(M)=5.95 \times 10^{-7}$ 9 E_γ : Others: 472.2 2 (1969Mc12), 473 (1968As05). I_γ : Uncertainty based on β branch to the g.s. E_γ : Others: 874.35 14 (1974AI03), 874.3 3 (1969Mc12), 873.5 11 (1968As05).
874.420 30	7.9 2	1346.64	1^+	472.2073	1^+			

[†] From $I(874)/I_\gamma(472)=7.9$ 2 (1974AI03). Other value: $I(874)/I_\gamma(472)=8.9$ 5 (1969Mc12). Reported uncertainty appears to be statistical only. A higher systematic uncertainty can be expected due to a bigger sample size, 1974AI03 report the counting cell

Continued on next page (footnotes at end of table)

${}^{24}\text{Ne} \beta^{-}$ decay (3.38 min) [1974Al03,1969Mc12,1968As05](#) (continued)

$\gamma({}^{24}\text{Na})$ (continued)

internal dimensions of 7.5 cm diam by 2 cm high.

‡ From Adopted Gammas.

[Additional information 1](#).

@ Absolute intensity per 100 decays.

${}^{24}\text{Ne}$ β^- decay (3.38 min) 1974Al03,1969Mc12,1968As05Decay SchemeIntensities: $I_{(\gamma+ce)}$ per 100 parent decays

Legend

