^{31}Si β^- decay (157.24 min)   **1993Ko49,1993Mc05**

	History		
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 184, 29 (2022)	24-Jun-2022

Parent: ^{31}Si: E=0.0; J^π=3/2$^+$; $T_{1/2}$=157.24 min *20*; $Q(\beta^-)$=1491.51 *4*; %β^- decay=100.0

^{31}Si-J^π,$T_{1/2}$: From Adopted Levels of ^{31}Si.

^{31}Si-$Q(\beta^-)$: From 2021Wa16.

1993Ko49: ^{31}Si from ^{31}P(n,p) reaction at the IPEN 2 MV research reactor Brazil. Used $4\pi\beta\gamma$ coin "efficiency tracing" technique to measure the emission probability of the very low intensity 1266 keV γ.

1993Mc05: ^{31}Si from neutron activation of ^{30}Si using the Cornell University nuclear reactor TRIGA. High purity Ge detectors for Eγ and Iγ measurements.

Other: 1954Ly42.

^{31}P Levels

E(level)	$J^{\pi\dagger}$
0.0	1/2$^+$
1266.1 *1*	3/2$^+$

† From Adopted Levels.

β^- radiations

^{31}Si β^- decays only to g.s. and 1266.1 level.

E(decay)	E(level)	I$\beta^{-\dagger}$	Log ft	Comments
(225.41 *11*)	1266.1	0.0554 *7*	5.747 *6*	av Eβ=68.938 *38* Iβ^-: from 1993Ko49. Other: 0.050 *4* (1993Mc05).
(1491.51 *4*)	0.0	99.9446 *7*	5.5250 *6*	av Eβ=595.93

† Absolute intensity per 100 decays.

$\gamma(^{31}$P)

Iγ normalization: From absolute intensity of 1266.2γ (1993Ko49).

E_γ	$I_\gamma^\ddagger$	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	$\alpha^\dagger$	Comments
1266.1 *1*	0.0554 *7*	1266.1	3/2$^+$	0.0	1/2$^+$	M1+E2	+0.26 *3*	3.32×10^{-5} *5*	α=3.32×10^{-5} *5*; α(K)=1.681×10^{-5} *24*; α(L)=1.252×10^{-6} *18*; α(M)=9.51×10^{-8} *14* α(IPF)=1.509×10^{-5} *23* I$_\gamma$: from 1993Ko49. 0.050 *4* (1993Mc05), 0.07 (1954Ly42). E$_\gamma$,Mult.,δ: from Adopted Gammas.

† Additional information 1.

‡ Absolute intensity per 100 decays.

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Decay Scheme

Intensities: $\text{I}_{(\gamma+ce)}$ per 100 parent decays

$3/2^{+}$ 0.0   157.24 min *20*

$\text{Q}_{\beta^{-}}$=1491.51 *4* $\%\beta^{-}$=100.0

${}^{31}_{14}\text{Si}_{17}$

Iβ^{-} Log *ft*

0.0554   5.747 $3/2^{+}$ 1266.1

1266.1 M1+E2 0.0554

99.9446   5.5250 $1/2^{+}$ 0.0

${}^{31}_{15}\text{P}_{16}$