^{33}Al β^-n decay (41.5 ms) 2019Li41,2017LiZZ,2008ReZZ

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 201,1 (2025)	31-Oct-2024

Parent: ^{33}Al: E=0; $J^\pi=(5/2)^+$; $T_{1/2}$=41.5 ms *1*; Q(β^-n)=7509 *7*; %β^-n decay=8.5 *7*

^{33}Al-J^π: From ^{33}Al Adopted Levels in the ENSDF database (March 2011 update).

^{33}Al-$T_{1/2}$: Weighted average of 41.4 ms *1* (2017Ha23, ion-β correlated decay curve); and 41.7 ms *2* (2002Mo29, ion-β correlated decay curve). Other: 41 ms *3* (2008ReZZ,1995ReZZ, nβ- or nγ-decay curves); 41.7 ms *2* in the ENSDF database (2011 update).

^{33}Al-Q(β^-n): From 2021Wa16.

^{33}Al-%β^-n decay: %β^-n=8.5 *7* (2008ReZZ,1995ReZZ) for the decay of ^{33}Al.

2019Li41, 2017LiZZ: measured β and γ spectroscopic data for decay chains of ^{34}Mg and ^{33}Al at CERN-ISOLDE.

2017Ha23: measured half-life of ^{33}Al decay.

2008ReZZ, 1995ReZZ: measured half-life and %β^-n at TOFI.

^{32}Si Levels

E(level)	J^π†	$T_{1/2}$†	Comments
0.0	0^+	157 y *7*	
1942	2^+	0.57 ps *9*	E(level): rounded value from Adopted Levels.

† From Adopted Levels.

$\gamma(^{32}Si)$

E_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
1942	1942	2^+	0.0	0^+	E_γ: rounded value from Adopted Gammas. Absolute intensity=22% *5* per 100 decays of ^{33}Al is deduced in 2019Li41,2017LiZZ using measured counts of ^{33}Al decays and 1942 transition, but this value exceeds %β^-n=8.5% measured in 2008ReZZ,1995ReZZ by a factor of ≈2.6, which suggests either a much higher %β^-n value for ^{33}Al decay or an overcounted/incorrect intensity of 1942γ in 2019Li41,2017LiZZ.

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Decay Scheme