^{34}Na β^-2n decay (5.5 ms) 1984Gu19,1984La03

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

Parent: ^{34}Na: E=0.0; $T_{1/2}$=5.5 ms *10*; Q(β^-2n)=16.37×10^3 *60*; %β^-2n decay≈50

^{34}Na-J$^\pi$: 1$^+$ proposed in 2021Ko07 with no argument or source provided.

^{34}Na-$T_{1/2}$: From neutron timing (1984La03).

^{34}Na-Q(β^-2n): 16370 *600* deduced from mass excess of 31680 *600* for ^{34}Na, −829 *3* for ^{32}Mg and 8071.3 for neutron in 2021Wa16.

^{34}Na-%β^-2n decay: %β^-n≈15, %β^-2n≈50 estimated by 2021Ko07 from %β^-n+2%β^-2n=115 *20* in 1984La03 and assuming %β^-n/%β^-2n=0.3 from trends in neighboring nuclei (2021Ko07). According to measurements of 1984La03, ^{34}Na decays almost 100% by delayed neutrons.

1984Gu19, 1984La03: ^{34}Na source was produced by fragmentation of a 30 g/cm^2 iridium target by 10 GeV protons from the CERN synchrotron, separated by a mass spectrometer, and transported into a thin stainless steel tube. γ rays were detected with Ge(Li) detectors and delayed-neutrons were detected with a ^{3}He proportional counter. Measured Eγ, delayed neutrons. Deduced levels, parent $T_{1/2}$, decay branching ratio.

^{32}Mg Levels

E(level)	J$^\pi$ †	$T_{1/2}$ †
0	0$^+$	80.4 ms *4*
885	2$^+$	13.1 ps *10*

† From Adopted Levels.

γ(^{32}Mg)

E$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Comments
885	885	2$^+$	0	0$^+$	E$_\gamma$: weak γ from 1984Gu09.

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Decay Scheme