

^{13}B β^- n decay: 17.30 ms [1969Jo21](#), [1974Al12](#)

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, J. E. Purcell and C. G. Sheu		NP A968,71 (2017)	1-Jan-2017

Parent: ^{13}B : $E=0$; $J^\pi=3/2^-$; $T_{1/2}=17.30$ ms 17; $Q(\beta^-n)=8490.6$ 10; $\% \beta^-n$ decay=0.286 37

^{13}B - $T_{1/2}$: From average of ([2008ReZZ](#), [1995ReZZ](#), [1988Sa04](#), [1971Wi07](#), [1962Ma19](#)).

^{13}B - $Q(\beta^-n)$: from ([2017Wa10](#)).

[1969Jo21](#): A beam of 3 MeV tritons impinged on a thick ^{11}B target producing ^{13}B nuclei via the $^{11}\text{B}(t,p)$ reaction. The target was irradiated for 3 ms, while counting lasted for 12 ms. The target was surrounded by a 3 inch by 2 inch beta counter scintillator, a 1 inch thick by 8 inch diameter NE102 neutron detector and a 5 inch by 5 inch NAI gamma-ray detector. Neutron energies were determined by time-of-flight between the beta and neutron detectors. population of relatively strong neutron branches from $^{13}\text{C}^*(7.5, 8.86$ MeV) were observed. Significantly stronger branches to $^{13}\text{C}^*(0, 3.68$ MeV) were deduced from the beta- and beta-gamma spectra (92.1% and 7.6%, respectively).

[1974Al12](#): The experimental setup was similar to ([1969Jo21](#)), except a longer neutron flight path was used and higher statistics were obtained. Weaker branches from $^{13}\text{C}^*(8.86, 9.90$ MeV) were observed, and an upper limit on decay from $^{13}\text{C}^*(9.50$ MeV) was established.

 ^{12}C Levels

<u>E(level)[†]</u>	<u>J^π[†]</u>
0.0	0 ⁺
4439.82 21	2 ⁺

[†] From Adopted Levels.

 $\gamma(^{12}\text{C})$

<u>E_γ</u>	<u>I_γ[†]</u>	<u>$E_i(\text{level})$</u>	<u>J^π_i</u>	<u>E_f</u>	<u>J^π_f</u>
4439	0.001	4439.82	2 ⁺	0.0	0 ⁺

[†] Absolute intensity per 100 decays.

Delayed Neutrons (^{12}C)

<u>E(n)[#]</u>	<u>E(^{12}C)</u>	<u>I(n)[@]</u>	<u>E(^{13}C)</u>
472 5	4439.82	≈ 0.001 [‡]	9897
2401 3	0.0	0.094 [†] 20	7547
3613 18	0.0	0.16 [†] 3	8860
4203.2 1	0.0	<0.01 [‡]	9500
4570 5	0.0	0.022 [‡] 7	9897

[†] From ([1969Jo21](#)).

[‡] From ([1974Al12](#)).

[#] E(n) deduced from Q ([2017Wa10](#)) and $^{13}\text{C}/^{12}\text{C}$ level energies in ENSDF.

[@] Absolute intensity per 100 decays.

$^{13}\text{B} \beta^- \text{n decay:17.30 ms} \quad 1969\text{Jo21,1974Al12}$

Decay Scheme

γ Intensities: I_γ per 100 parent decays
I(n) Intensities: I(n) per 100 parent decays

