

^{87}As β^- -n decay (482 ms) 2015Ko19,2020ToZY

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	A. Negret and B. Singh		NDS 203,283 (2025)	20-Jan-2025

Parent: ^{87}As : $E=0$; $J^\pi=(3/2^-, 5/2^-)$; $T_{1/2}=482$ ms 35; $Q(\beta^-n)=6814$ 4; $\%\beta^-n$ decay=78 4

^{87}As - J^π : Proposed by 2015Ko19.

^{87}As - $T_{1/2}$: weighted average of 484 ms 35 (2013Ma22, β -gated decay curves of γ rays in ^{87}Se and ^{86}Se , weighted average of 478 ms 44 and 495 ms 60 for 92 γ and 704 γ , respectively); and 0.48 s 4 (1993Ru01, β n-decay curve). Others: 1.5 s +39–12 (2012Qu01), 0.73 s 6 (1978Cr03), 0.6 s 3 (1970Kr05).

^{87}As - $Q(\beta^-n)$: From 2021Wa16.

^{87}As - $\%\beta^-n$ decay: $\%\beta^-n=78$ 4 (2020ToZY, simultaneous fit of β^- - and β n-decay curves). Other: 15.4 22 (1993Ru01); 44 14 (1978Cr03).

2015Ko19, 2013Ma22: ^{87}As produced in $\text{U}(p,F), E(p)=54$ MeV at HRIBF-ORNL using ^{238}U target. Fission products were mass separated, and beam of ^{87}As was deposited on a moving tape collector (MTC) at the Low-Energy Radioactive Ion Beam Spectroscopy Station (LeRIBSS). Measured E_γ , I_γ , $\beta\gamma$ -coin, $\beta\gamma\gamma$ -coin, half-life of ^{87}As decay using HPGe clover detectors for γ rays and two plastic scintillation counters for β -particles. For $T_{1/2}$ of decay of ^{87}As , 2015Ko19 referred to their previous measurement in 2013Ma22, but in the text and decay scheme Fig. 3, authors listed a value of 0.56 s 8 from the 2002He09 (ENSDF) evaluation.

2020ToZY: ^{87}As produced in $^9\text{Be}(^{238}\text{U}, F), E=345$ MeV/nucleon; followed by separation of fragments by A/Q and Z using BigRIPS and ZeroDegree spectrometers at RIBF-RIKEN facility through measurements of time-of-flight (TOF), magnetic rigidity ($B\rho$) and energy loss (ΔE). Measured implanted ions, neutrons, β , γ , $\beta(\text{implants})$, $(\text{implants})\beta(1n)$ - and $(\text{implants})\beta(2n)$ -correlations using BRIKEN neutron counter with 140 ^3He -filled proportional counters, AIDA array of DSSSDs for implants and β decays, two Clover HPGe detectors for γ radiation, and two thick plastic scintillators; deduced $\%\beta^-n$ or P_n from simultaneous fits of β^- - and β^-1n -decay curves, with uncertainties from Monte Carlo method.

1993Ru01: measured $\%\beta^-n$, $T_{1/2}$.

Theoretical calculations of $T_{1/2}$ and $\%\beta^-n$: 2005Bo19.

 ^{86}Se Levels

$E(\text{level})^\dagger$	$J^\pi^\ddagger$	$T_{1/2}^\ddagger$	Comments
0.0	0^+	14.3 s 3	
704.1 3	2^+		
1398.7 5	(2^+)		J^π : tentatively assigned level in 2015Ko19.
1567.4 6	4^+		

† From least-squares fit to E_γ data.

‡ From the Adopted Levels, unless otherwise noted.

 $\gamma(^{86}\text{Se})$

$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ‡
694.5 5	18 8	1398.7	(2^+)	704.1	2^+	
704.1 3	100 9	704.1	2^+	0.0	0^+	E2
863.3 5	12 1	1567.4	4^+	704.1	2^+	E2
1399 1	14.9 12	1398.7	(2^+)	0.0	0^+	

† From 2015Ko19.

‡ From Adopted Gammas.

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