^{136}Sn β^-n decay (327 ms)   **2002Sh08,2007Ma40**

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	31-Dec-2016

Parent: ^{136}Sn: E=0.0; J^π=0$^+$; $T_{1/2}$=327 ms *34*; Q(β^-n)=5720 *SY*; %β^-n decay=28 *4*

^{136}Sn-Q(β^-n): Q(β^-n)=5720 *400* (syst,2012Wa38).

^{136}Sn-$T_{1/2}$: Values of 350 ms *5* (2015Lo04, β(ion) correlated decay curve); 250 ms *30* (2002Sh08); and 300 ms *15* (2011Ar18, from decay curve for delayed neutrons) represent a discrepant dataset. The recommended value is from expected value method (EVM) in V-AVELIB code available from www.nndc.bnl.gov webpage. Unweighted average is 300 ms *30*. Weighted average (with LWM method) is 320 ms *23* but with reduced χ^2=6.1 as compared to critical χ^2=3.0 at 95% confidence level.

^{136}Sn-%β^-n decay: %β^-n=28 *4* for ^{136}Sn decay (from weighted average of 30 *5* (2002Sh08) and 27 *4* (2011Ar18)).

2002Sh08: Measured Eγ, Iγ, $\gamma\gamma$, lifetimes, delayed neutron probability using high-efficiency Mainz neutron long counter with 3-ring concentric array of 50 ^{3}He proportional counters, β detector, and Pb-shielded Ge detectors. No γ rays were seen from ^{136}Sn β^-n decay.

2007Ma40: High purity ^{136}Sn beam extracted at ISOLDE facility. Measured β, γ, $\gamma\gamma$ coin, $\beta\gamma\gamma$(t) using five detectors: three fast timing scintillators (LaBr$_3$(Ce) and BaF$_2$) and two large-volume Ge detectors. Advanced time-delay (ATD) method used to measure lifetimes. 2007Ma40 is a conference paper and the authors state that analysis is still in progress.

The level scheme and γ rays are from 2007Ma40.

^{135}Sb Levels

E(level)	$J^{\pi\dagger}$	$T_{1/2}$	Comments
0	(7/2$^+$)		
282	(5/2$^+$)		
440	(3/2$^+$)		
523	(1/2$^+$)	1.2 ns *1*	$T_{1/2}$: preliminary value from $\beta\gamma\gamma$(t); advanced time-delay method (2007Ma40).

† From Adopted Levels.

γ(^{135}Sb)

E_γ	E_i(level)	J^π_i	E_f	J^π_f
158	440	(3/2$^+$)	282	(5/2$^+$)
241	523	(1/2$^+$)	282	(5/2$^+$)
282	282	(5/2$^+$)	0	(7/2$^+$)
440	440	(3/2$^+$)	0	(7/2$^+$)

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Legend   Decay Scheme

•   Coincidence

0$^+$ 0.0   327 ms 34

%β^-n=28   Q=5720 SY

$^{136}_{50}$Sn$_{86}$

(1/2$^+$)   241   523   1.2 ns I

(3/2$^+$)   440 158   440

(5/2$^+$)   282   282

(7/2$^+$)   0

$^{135}_{51}$Sb$_{84}$