^{138}Sb β^- decay 2015Le14

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 146, 1 (2017)	30-Sep-2017

Parent: ^{138}Sb: E=0.0; $T_{1/2}$=348 ms *15*; Q(β^-)=11.5×10^3 *11*; %β^- decay=100.0

^{138}Sb-J$^\pi$: (3$^-$) tentative assignment proposed by 2015Le14, based on strong feedings to (2$^+$) and (4$^+$) states in ^{138}Te.

^{138}Sb-$T_{1/2}$: From Adopted Levels of ^{138}Sb. Value from 2015Le14: 346 ms *19* from $\beta\gamma$(t), weighted average of β442.8γ(t) and β460.8γ(t); preliminary value from 2006KeZZ: 296 ms *35* from decay curve.

^{138}Sb-Q(β^-): From 2017Wa10, ΔQ=300 (syst).

2015Le14: Source of ^{138}Sb was produced by in-flight fission of ^{238}U on a ^{9}Be target at E=345 MeV/nucleon at the Radioactive Isotope Beam Factory (RIBF) at the RIKEN Nishina Center. Fragments were separated by the BigRIPS separator and identified through a zero-degree spectrometer (ZDS) based on the Bρ-ΔE-tof method. Separated and selected ions were implanted into a wide-range active-silicon-strip stopper array for beta and ion detector (WAS3ABi), consisting of five layers of 1-mm-thick double-sided silicon-strip detectors (DSSSDs), surrounded by two 2-mm-thick plastic scintillators. γ rays were detected by the EUROBALL-RIKEN HPGe cluster array (EURICA). Measured Eγ, Iγ, $\beta\gamma$(t), $\beta\gamma$-coin, $\beta\gamma\gamma$-coin. Deduced levels, J, π, parent $T_{1/2}$, β-decay branching ratios, log *ft*. Comparisons with shell-model calculations. Energy systematics of Te isotopes.

Other measurement: 2006KeZZ.

Due to the large gap between the Q(β^-)value and the highest observed level energy, the decay scheme is incomplete and thus the values of β-decay branching ratios and Log *ft* are not given.

%β^-n=72 *8* for ^{138}Sb from 2011Ar18.

^{138}Te Levels

E(level)†	J$^\pi$‡	$T_{1/2}$	Comments
0	0$^+$	1.4 s *4*	$T_{1/2}$: from Adopted Levels.
460.8 *5*	(2$^+$)		
903.6 *7*	(4$^+$)		
1323.4 *7*			
1531.2 *9*			
1581.1 *7*			
1615.3 *7*			
1682.1 *9*			
2039.7 *9*			

† From a least-square fit to γ-ray energies.

‡ From Adopted Levels.

γ(^{138}Te)

E$_\gamma$†	I$_\gamma$‡	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.#
442.8 *5*	40 *3*	903.6	(4$^+$)	460.8	(2$^+$)	(E2)
460.8 *5*	100	460.8	(2$^+$)	0	0$^+$	(E2)
627.6 *5*	6 *1*	1531.2		903.6	(4$^+$)	
778.5 *5*	3 *1*	1682.1		903.6	(4$^+$)	
862.6 *5*	7 *1*	1323.4		460.8	(2$^+$)	
1120.3 *5*	5 *1*	1581.1		460.8	(2$^+$)	
1136.1 *5*	3 *1*	2039.7		903.6	(4$^+$)	
1154.5 *5*	6 *1*	1615.3		460.8	(2$^+$)	

† From 2015Le14.

‡ Relative intensities normalized to Iγ(460.8γ)=100. Quoted uncertainties include statistical and 5% systematical error estimated from the γ-ray efficiency of the EURICA (2015Le14).

From Adopted Gammas.

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Decay Scheme

Intensities: Relative I_γ