^{128}Sn IT decay (2.91 μs) 2010At03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Zoltan Elekes and Janos Timar	NDS 129, 191 (2015)	28-Feb-2015

Parent: ^{128}Sn: E=2491.91 *17*; $J^\pi=(10^+)$; $T_{1/2}$=2.91 μs *14*; %IT decay=100.0

2010At03: ^{128m}Sn produced in the reactions: ^{9}Be(^{136}Xe,X) E=600 MeV/nucleon, beam provided by the GSI heavy-ion synchrotron at GSI facility. Fully stripped ions of ^{128}Sn were separated and identified with the two-stage high-resolution magnetic zero degree frs. Mass to charge ratio was measured by time-of-flight and the magnetic rigidity $B\rho$. The isomeric sample is spin oriented. Momentum distribution of the fragments was measured with the frs settings. The selected ions were finally implanted in a 2 mm thick copper plate fixed to a thick plastic degrader. The isomeric γ rays were measured with eight cluster Ge detectors placed at ±45°, ±75°, ±105° and ±135° relative to the beam direction. Ion-γ coincidences were used as trigger of the data acquisition system. The g-factor was determined by time-differential perturbed angular distribution (TDPAD) method.

$R(t,\theta,\omega_L)=(I(t,\theta,\omega_L)-\varepsilon I(t,\theta+\pi/2,\omega_L))\ /\ (I(t,\theta,\omega_L)-\varepsilon I(t,\theta+\pi/2,\omega_L))$ where I is the intensity of the isomeric transition, θ is the detection angle, ε is the normalization factor, ω_L is the Larmor frequency.

^{128}Sn Levels

E(level)†	J^π	$T_{1/2}$	Comments
0.0	0^+		
1169	$(2)^+$		
2001	(4^+)		
2092	(7^-)	6.5 s *5*	%IT=100 $T_{1/2}$: from Adopted Levels.
2121	(5^-)		
2413	(8^+)		
2492	(10^+)	2.69 μs *23*	%IT=100 g=−0.20 *4* (2010At03) g: TDPAD method (2010At03). Comparison with shell-model calculations confirm dominance of $\nu h_{11/2}^{-2}$ configuration. $T_{1/2}$: from ^{128}Sn β^- decay (0.72 s).

† The level scheme presented in 2010At03 is not based on their measurements. Levels are taken from Adopted Levels.

$\gamma(^{128}Sn)$

E_γ†	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α‡	Comments
79	2492	(10^+)	2413	(8^+)			
91	2092	(7^-)	2001	(4^+)	E3	26.5	α(K)=9.68 *14*; α(L)=13.44 *19*; α(M)=2.87 *4*; α(N)=0.498 *7*; α(O)=0.01422 *20*
120	2121	(5^-)	2001	(4^+)			
321	2413	(8^+)	2092	(7^-)			R(t) function of this γ was measured (see Fig. 5 in 2010At03).
832	2001	(4^+)	1169	$(2)^+$			
1169	1169	$(2)^+$	0.0	0^+			

† Only the 321γ was detected in 2010At03. Rounded energies are taken from Adopted Gammas.

‡ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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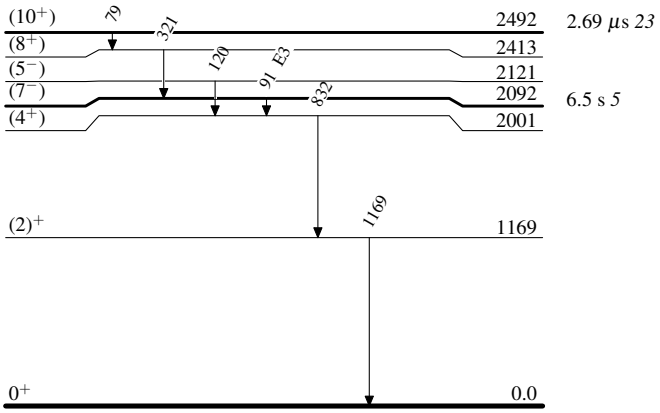
Decay Scheme

%IT=100.0



$^{128}_{50}Sn_{78}$