^{210}Hg IT decay (2.1 μs) 2013Go10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 121, 561 (2014)	31-Mar-2014

Parent: ^{210}Hg: E=663; J^π=(3$^-$); $T_{1/2}$=2.1 μs *7*; %IT decay=100.0

^{210}Hg isomer was produced from fragmentation of ^{238}U, 1 GeV/nucleon, beam on beryllium target (2.5 g/cm^2) followed by a niobium (223 mg/cm^2) stripper. Pulsed beam of ~1 s separated by ~2 s, fragmented products were separated and identified with the double-stage magnetic spectrometer FRS at GSI. Separated ions were slowed down in a thick Al degrader and implanted in a composite double-sided silicon-strip (DSSD) detector. The DSSD was surrounded by the RISING γ-ray spectrometer consists of 105 large volume germanium crystals. Measured Eγ, Iγ, x-ray, and $T_{1/2}$. Deduced level scheme.

^{210}Hg Levels

E(level)†	J^π‡	$T_{1/2}$	Comments
0.0	0$^+$		
643	(2$^+$)		
(663)	(3$^-$)	2.1 μs *7*	J^π: (3$^-$) in 2013Go10, based on unobserved but expected highly converted 20 keV γ-ray feeding the (2$^+$) state, 663γ to 0$^+$ g.s., and calculated reduced transition strengths. Shell model calculation can not reliably predict the location of a 3$^-$ state, because it does not allow core excitations and also the 3$^-$ state in the lead region is very fragmented as mentioned in 2013Go10. For ^{208}Pb, ^{210}Pb, and ^{214}Pb nuclides 3$^-$ state is prediction at much higher energy. $T_{1/2}$: From 663γ(t).

† From γ-ray energy and feeding.

‡ From shell model calculation and γ ray feeding, except otherwise noted.

γ(^{210}Hg)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
(20)		(663)	(3$^-$)	643	(2$^+$)	[E1]	E_γ: γ-ray proposed with 3/4 intensity of 643γ from the intensity balance at 643 keV level.
643	100 *16*	643	(2$^+$)	0.0	0$^+$		
663	65 *13*	(663)	(3$^-$)	0.0	0$^+$	[E3]	

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Decay Scheme

Intensities: Relative I_γ

%IT=100.0