^{238}U(^{64}Ni,Xγ) 2014Is04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	H. Iimura, J. Katakura, S. Ohya	NDS 180, 1 (2022)	1-Oct-2021

Includes ^{238}U(^{48}Ca,Xγ) reaction.
2014IS04 and also 2013IS04.
Fusion-fission reactions using E(^{48}Ca)=330 MeV, and E(^{64}Ni)=430 MeV beams from ATLAS-ANL facility. Target=^{238}U.
Detector: Gammasphere array consists of 110 Compton-suppressed HPGe detectors.
Measured Eγ, Iγ, $\gamma\gamma\gamma$-coin with pulsed beams separated by 420 ns. Prompt (P) and Delayed (D) data were sorted into PPP, PDD, and DDD cubes on γ rays; deduced high-spin levels above the 7^- seniority-2 and 15^- seniority-4 isomers. Comparison with shell-model calculations.

^{126}Sn Levels

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	Comments
2218.99 *8*	7^-	6.1[#] μs *7*	%IT=100 Additional information 1. E(level): from Adopted Levels.
2488.25 *5*	(8^+)		
2564.6[@] *4*	(10^+)	7.6[#] μs *2*	
3284.0 *3*	(9^-)		
3595.6[@] *4*	(12^+)		
3926.1 *3*	(11^-)		
4166.6[&] *4*	(13^-)	≤3 ns	T$_{1/2}$: from 2014Is04.
4347.4[&] *4*	(15^-)	114 ns *12*	T$_{1/2}$: measured from time distribution of double coincidence gates on 181γ and 571γ, 1031γ (2014Is04). The half-life for this level is significantly shorter compared to 160 ns *20* (2012As05) in ^{238}U(^{12}C,Fγ).
4561.1 *5*	(14^-)		
4583.2[@] *6*	(14^+)		
5061.1[@] *7*	(16^+)		
5497.4[&] *4*	(17^-)		
5838.3[@] *9*	(18^+)		
6258.9[&] *4*	(19^-)		
7324.1 *7*			
8375.5 *8*			

[†] From least-squares fit to γ-ray energies.
[‡] From Adopted Levels.
[#] From Adopted Levels.
[@] Band(A): Band based on (10^+) state.
[&] Band(B): Band based on (13^-) state.

γ(^{126}Sn)

E$_\gamma$	I$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Comments
76.3[†] *5*		2564.6	(10^+)	2488.25	(8^+)	
180.8 *1*	100[#]	4347.4	(15^-)	4166.6	(13^-)	
213.7 *3*	19[‡] *2*	4561.1	(14^-)	4347.4	(15^-)	
240.5 *2*	18[#] *2*	4166.6	(13^-)	3926.1	(11^-)	
269.26[†] *5*		2488.25	(8^+)	2218.99	7^-	E$_\gamma$: 269.3 in figure 14 of 2014Is04.

Continued on next page (footnotes at end of table)

^{238}U(^{64}Ni,Xγ) 2014Is04 (continued)

$\gamma(^{126}Sn)$ (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
477.9 *4*	45‡ *4*	5061.1	(16^+)	4583.2	(14^+)	
571.0 *1*	82# *5*	4166.6	(13^-)	3595.6	(12^+)	
642.2 *2*	8# *2*	3926.1	(11^-)	3284.0	(9^-)	
713.7@	<3‡	5061.1	(16^+)	4347.4	(15^-)	
761.5 *2*	40‡ *3*	6258.9	(19^-)	5497.4	(17^-)	
777.2 *5*	22‡ *2*	5838.3	(18^+)	5061.1	(16^+)	
987.6 *4*	72‡ *5*	4583.2	(14^+)	3595.6	(12^+)	
1030.9 *1*	154 *9*	3595.6	(12^+)	2564.6	(10^+)	I_γ: the summed intensity of prompt and delayed feeding.
1065.0 *3*	8# *2*	3284.0	(9^-)	2218.99	7^-	
1150.0 *1*	100‡	5497.4	(17^-)	4347.4	(15^-)	
1361.6 *3*	10# *2*	3926.1	(11^-)	2564.6	(10^+)	
1826.7 *5*	8‡ *2*	7324.1		5497.4	(17^-)	
2116.6 *6*	18‡ *3*	8375.5		6258.9	(19^-)	

† From Adopted Gammas.
‡ Intensity normalized to 100 for the prompt 1150γ transition. Note that * symbol for 777.2γ should be present in Table V of 2014Is04, which was also indicated from the authors.
# Intensity normalized to 100 for the delayed 181γ transition.
@ Placement of transition in the level scheme is uncertain.

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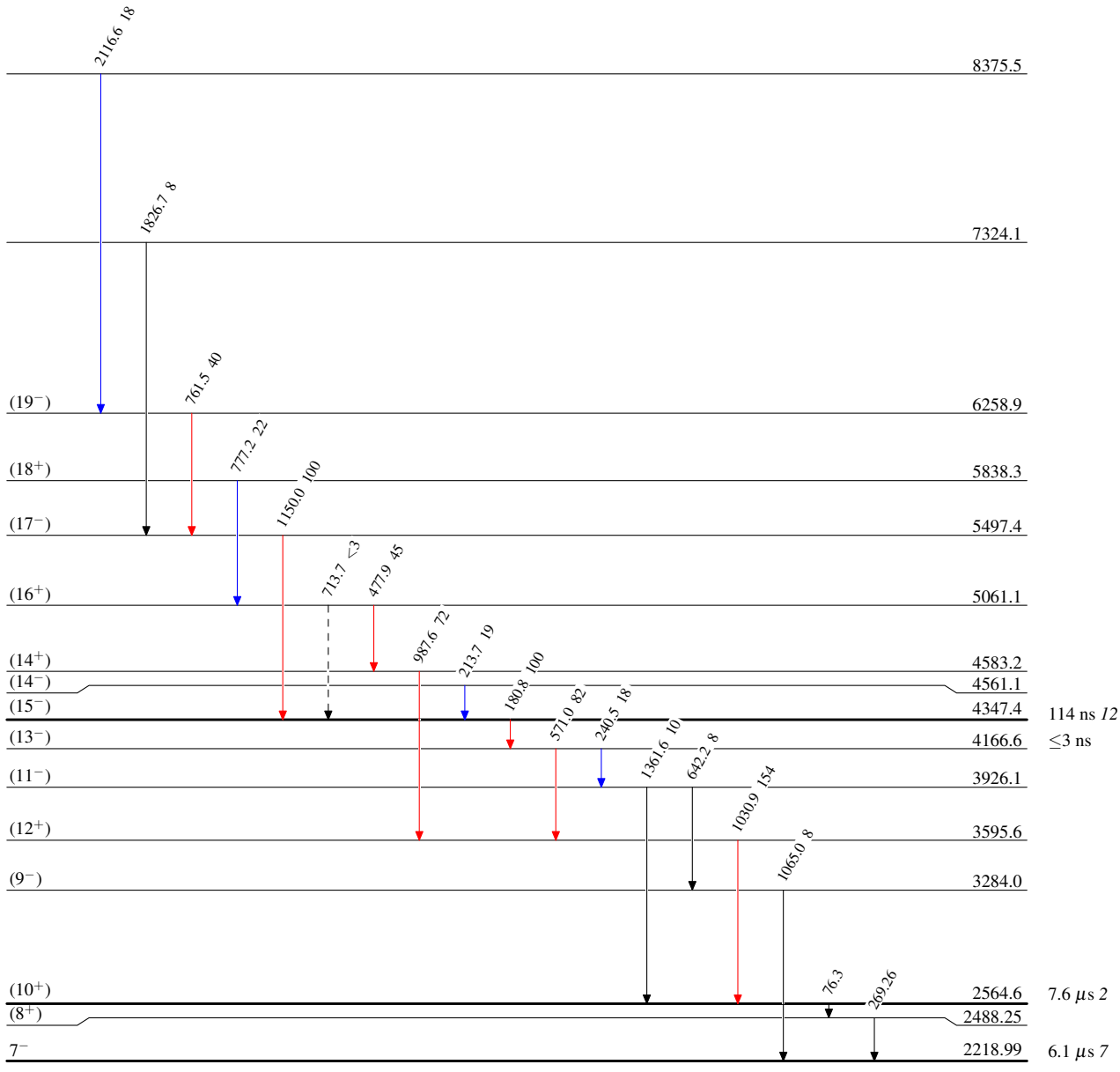
Level Scheme

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



$^{126}_{50}Sn_{76}$

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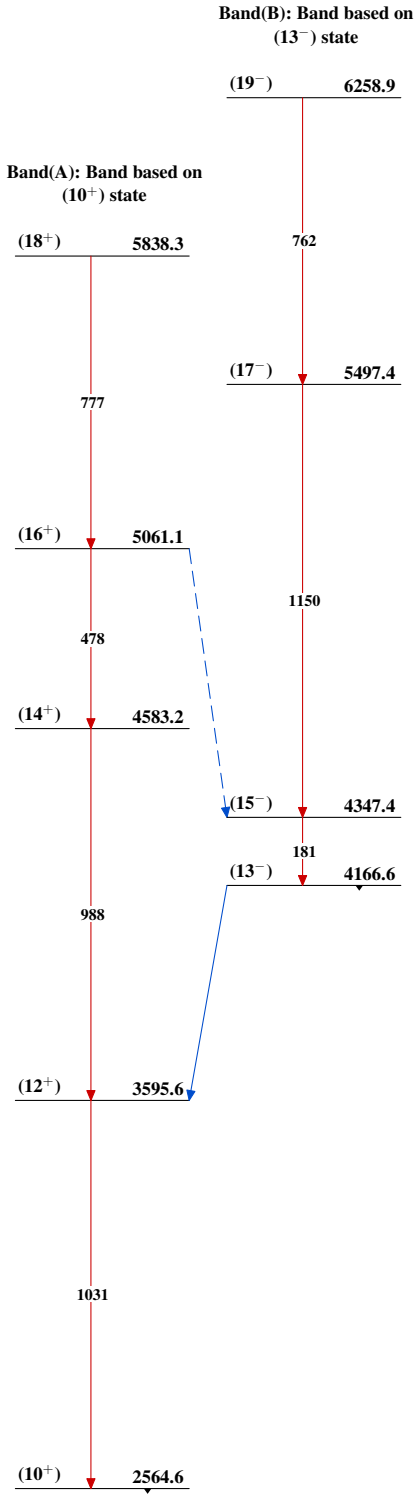

$^{126}_{50}Sn_{76}$