

^{126}Pd IT decay (23.0 ms) 2014Wa26

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

Parent: ^{126}Pd : $E=2406.4$ 10; $J^\pi=(10^+)$; $T_{1/2}=23.0$ ms 10; %IT decay=28 8

^{126}Pd -%IT decay: From 2014Wa26.

2014Wa26: a high-spin isomer in ^{126}Pd produced in $^9\text{Be}(^{238}\text{U},\text{F})$ reaction at 345 MeV/nucleon at RIBF-RIKEN facility. Residual nuclei of interest were separated and identified using BigRIPS and ZeroDegree spectrometer. A total of 53,000 ^{126}Pd fragments were implanted in a highly segmented active stopper WAS3ABi consisting of eight double-sided silicon-strip detectors (DSSSDs). These detectors were used for detecting β particles as well as conversion electrons from highly-converted transitions in ^{126}Pd . The gamma rays were detected using EURICA array with 12 Cluster-type HPGe detectors with a timing window of 100 μs relative to the trigger signal from a plastic scintillator placed at the end of the beam line. Measured E_γ , I_γ , (particle) γ (delayed) coincidence. Deduced levels in ^{126}Pd and ^{126}Ag , J , π , half-lives of isomer and ground state of ^{126}Pd . 2014Wa26 discusses in detail the small energy difference of 297 keV between the (10^+) and (7^-) isomers as compared to similar levels in heavier N=80 isotones, and the role of configuration mixing.

 ^{126}Pd Levels

E(level) [†]	J^π	$T_{1/2}$ [‡]	Comments
0.0	0^+	48.5 ms 7	
693.3 5	(2^+)		
1481.0 7	(4^+)		
2023.5 7	(5^-)	0.33 μs 4	%IT=100
2109.7 9	(7^-)	0.44 μs 3	%IT=100
2406.4 10	(10^+)	23.0 ms 10	Dominant configuration= $\nu 1h_{11/2}^{-1} \otimes \nu 2d_{3/2}^{-1}$, with maximum alignment (2014Wa26). %IT=28 8 (2014Wa26); % β^- =72 8

[†] From a least-squares fit to the E_γ data. The evaluators have assigned an uncertainty of 0.5 keV for each γ ray.

[‡] From the Adopted Levels.

 $\gamma(^{126}\text{Pd})$

I_γ normalization: From an average of 100 for $I_\gamma(693.3\gamma)$, $I_{\gamma+ce}(296.7\gamma)$ and $I_\gamma(787.7\gamma+1330.2\gamma)$.

E_γ [†]	I_γ ^{‡#}	E_i (level)	J_i^π	E_f	J_f^π	Mult.	α [@]	Comments
86.2		2109.7	(7^-)	2023.5	(5^-)	[E2]	2.37 6	α : The uncertainty includes an uncertainty in E_γ of 0.5 keV assigned by the evaluators.
296.7	7.5 8	2406.4	(10^+)	2109.7	(7^-)	[E3]	0.1197	The 297-keV γ peak is seen in coincidence with conversion electrons for the 86-keV transition, and with other γ rays such as 693 γ in ^{126}Pd and 598 γ in ^{126}Ag .
542.4	4.1 6	2023.5	(5^-)	1481.0	(4^+)	[E1]		
693.3	6.6 9	693.3	(2^+)	0.0	0^+			
787.7	3.8 5	1481.0	(4^+)	693.3	(2^+)			
1330.2	3.5 8	2023.5	(5^-)	693.3	(2^+)	[E3]		

[†] No uncertainties are given by the authors.

[‡] Relative to 100 for the 842.6 γ in ^{126}Ag from decay of the ^{126}Pd ground state.

For absolute intensity per 100 decays, multiply by 3.8 11.

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

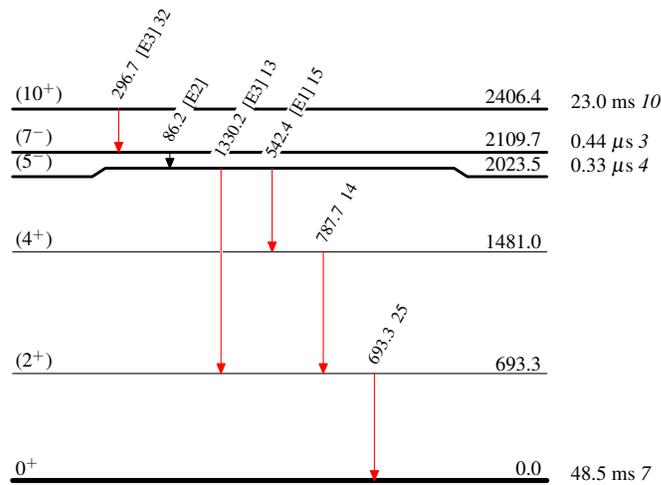
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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
 %IT=28.8

Legend

- $I_{\gamma} < 2\% \times I_{\gamma}^{max}$
- $I_{\gamma} < 10\% \times I_{\gamma}^{max}$
- $I_{\gamma} > 10\% \times I_{\gamma}^{max}$

 $^{126}_{46}\text{Pd}_{80}$