Adopted Levels, Gammas

History

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

Q(β^-)=11540 *SY*; S(n)=4270 *SY*; S(p)=14050 *SY*; Q(α)=−11270 *SY* 2021Wa16
ΔQ(β^-)=200, ΔS(n)=480, ΔS(p)=450, ΔQ(α)=360 (2021WA16).
1994Be24, 1998Do08: ^{126}Ag produced and identified in Pb(^{238}U,F), E=750 MeV/nucleon reaction using FRS separator and tof at GSI.
1995Fe12: U(p,F),E=1 GeV, ISOLDE-CERN facility, measured half-life from neutron decay curve.
2000Ka48, 2004KaZR, 2005Ka45: study of ^{126}Ag decay and levels in ^{126}Cd. Isomeric activity suggested in 2005Ka45.
Additional information 1.
2014Ba18 (also 2012Ba62): ^{126}Ag produced in ^{238}U(p,F) at beam energy of E(p)=50 MeV at HRIBF-ORNL. Measured Eγ, Iγ, $\gamma\gamma$-coin, half-lives of two activities in ^{126}Ag, one of low-spin (≤4) and the other of high spin (≥8).
2015Lo04: ^{126}Ag nuclide produced at RIBF-RIKEN facility in ^{9}Be(^{238}U,F) reaction at E=345 MeV/nucleon with an average intensity of 6×10^{10} ions/s. Measured half-life by ion-β correlation and maximum likelihood fits to the decay curve.
2021Ha19: ^{126}Ag produced in ^{9}Be(^{238}U,F) reaction with ^{238}U beam of 345 MeV/nucleon from the cascade operation of the RIBF complex of accelerators at RIKEN. Identification of ^{126}Ag made on the basis of magnetic rigidity, time-of-flight and energy loss using the BigRIPS separator and ZeroDegree spectrometer. The separated nuclei were sent to the Advanced Implantation Detector Array (AIDA) for the detection of implanted ions and subsequent β^- and β^--delayed neutrons using six double-sided silicon-strip detector (DSSDs) for particles, and BRIKEN neutron counter array of 140 ^{3}He proportional counters embedded in a high-density polyethylene (HDPE) matrix. Measured and analyzed (implanted ions)-β and (implanted ions)-β-n correlated events to deduce half-life of decay and delayed-neutron emission probability (%β^-n or (P_{1n}). Comparison of measured half-lives and P_n values with FRDM+QRPA, FRDM+QRPA+HF, RHB+pn:RQRPA and EDM calculations.

^{126}Ag Levels

Cross Reference (XREF) Flags

A ^{126}Pd β^- decay (48.5 ms)
B ^{126}Pd β^- decay (23.0 ms)
C ^{126}Ag IT decay (27 μs)

E(level)	J^π	$T_{1/2}$	XREF	Comments
0+x	(3$^+$)	52 ms *10*	A C	%β^-=100; %β^-n=? Measured %β^-n: 3.8 *2* (2021Ha19), 13.7 *11* (2014SmZZ). These values probably include 0+x and 0+y levels. J^π: as proposed in 2013La11 based on systematics of odd-odd Ag isotopes as well as the N=79 isotone ^{128}In. 2021Ko07 also suggested 3$^+$ from systematics. Other: J≤4 (2014Ba18) from decay pattern to levels in ^{126}Cd. $T_{1/2}$: from background-subtracted sum of the transitions de-exciting the 1579-, 1944-, 2469- and 2662-keV levels in ^{126}Cd (2014Ba18).
0+y	(≥8)	92 ms *9*		%β^-=100; %β^-n=? Measured %β^-n: 3.8 *2* (2021Ha19), 13.7 *11* (2014SmZZ). These values probably include 0+x and 0+y levels. E(level): 2021Ko07 suggested 100 *100* from systematics. J^π: from decay pattern to levels in ^{126}Cd (2014Ba18). 2021Ko07 proposed 9$^-$ from systematics. $T_{1/2}$: from background-subtracted sum of the transitions de-exciting the 2120-, 2584-, 2666- and 2758-keV levels in ^{126}Cd (2014Ba18). Other measured $T_{1/2}$ values: 103.2 ms *14* (2021Ha19), 98 ms *5* (2015Lo04), 114 ms *3* (2014SmZZ), 95 ms (2000Ka48), 107 ms *12* (1995Fe12). Only one activity in ^{126}Ag is reported by 2021Ha19, 2015Lo04, 2000Ka48 and 1995Fe12, whose half-life agrees with that of the high-spin isomer in 2014Ba18.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{126}Ag Levels (continued)

E(level)	J^π	$T_{1/2}$	XREF	Comments
0+z			B	E(level): this level may be the same as 0+x, or the ground state of ^{126}Ag.
194+z			B	
254.8+x *5*	(1^-)	27 μs *6*	A C	%IT=100 J^π: based on systematics and observed decay pattern (2013La11). $T_{1/2}$: from γ(t) (2013La11). Other: >20 μs (2012Ka36).
792+z?†			B	
1534+z?†			B	
1762+z?†			B	
2121+z			B	

† Level energy is uncertain due to ambiguous ordering of the transitions in the 359.5-227.9-741.8-598.1 cascade.

γ(^{126}Ag)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α‡	Comments
194+z		193.7	100	0+z				
254.8+x	(1^-)	254.8 *5*	100	0+x	(3^+)	(M2)	0.163	B(M2)(W.u.)=0.037 *+10−7*
792+z?		598.1†	100	194+z				
1534+z?		741.8†	100	792+z?				
1762+z?		227.9†	100	1534+z?				
2121+z		359.5†	100	1762+z?				

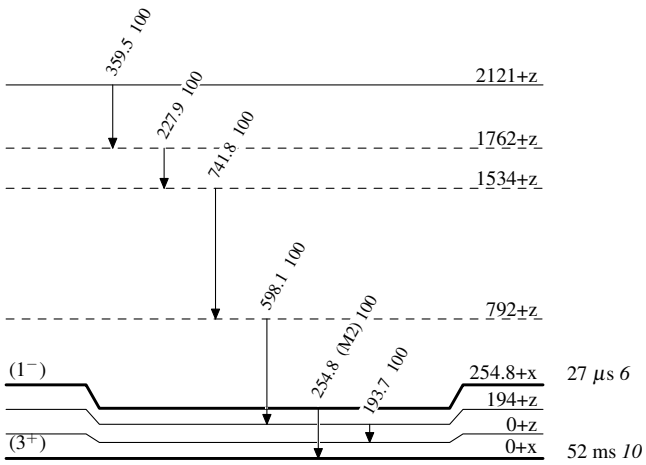
† Ordering of the transitions in the 359.5-227.9-741.8-598.1 cascade is not determined.

‡ 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.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{126}_{47}Ag_{79}$