^{125}Ag IT decay (0.491 μs) 2013La11,2012Ka36,2009St28

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	20-Aug-2015

Parent: ^{125}Ag: E=1501.2 *6*; J^π=(17/2$^-$); $T_{1/2}$=0.491 μs *20*; %IT decay=100.0

Reactions: ^{9}Be(^{136}Xe,Xγ) (2009St28); ^{9}BE(^{238}U,Fγ) (2012Ka36); ^{9}Be(^{136}Xe,Xγ),(^{238}U,Fγ) (2013La11).

2009St28 (also 2007To23, 2006ToZW, 2005WaZY): ^{136}Xe beam of E=120 MeV/nucleon. Reaction products separated by A1900 spectrometer, and implanted in NSCL-MSU Beta Counting System, consisting of three silicon PIN detectors, one double-sided and six single-sided silicon detectors. Neutron-rich Pd and Ag isotopes identified based on time-of-flight and energy loss. Measured Eγ, Iγ, half-life, fragment-γ coincidence. One possible scenario of placement of the four γ rays is shown, with an ambiguous ordering of the 731-672 and 717-686 cascades.

2012Ka36: ^{238}U beam at E=345 MeV/nucleon provided by the RIBF accelerator complex at RIKEN facility. Fission fragments were separated and analyzed by BigRIPS separator, transported to focal plane of ZeroDegree spectrometer and finally implanted in an aluminum stopper. Particle identification was achieved by ΔE-tof-Bρ method. Delayed gamma rays from microsecond isomers were detected by three clover-type HPGe detectors. Measured Eγ, Iγ, $\gamma\gamma$-coin, isomer half-life. Deduced levels, J, π. Comparison with previous studies.

2013La11: facility: GSI, SIS-18 synchrotron. Beams: ^{136}Xe and ^{238}U at 750 MeV/nucleon. Targets: 1 and 4 g/cm^2 Be. Detectors: FRS, ionization chambers, multiwire chambers, scintillation detectors, RISING multidetector array comprising 105 HPGe detectors, mounted in 15 composite Cluster detectors without anti-Compton shields. Measured: tof, ΔE, Bρ, Eγ, Iγ, γ(t), $\gamma\gamma$, $\gamma\gamma$(t), level half-lives.

^{125}Ag Levels

E(level)†	J^π‡	$T_{1/2}$	Comments
0.0	(9/2$^+$)	159 ms *8*	$T_{1/2}$: from Adopted Levels.
669.9 *5*	(11/2$^+$)	<25 ns	J^π: (13/2$^+$) in 2009St28.
714.2 *5*	(13/2$^+$)	<25 ns	
1398.3 *5*	(13/2$^-$)		J^π: (15/2$^+$,13/2$^-$) in 2009St28.
1479.0 *7*	(15/2$^+$)		
1501.2 *6*	(17/2$^-$)	0.491 μs *20*	%IT=100 $T_{1/2}$: weighted average of 0.474 μs *35* (2013La11), 0.498 μs *+21−20* (2012Ka36), and 0.47 μs *11* (2009St28, earlier value: 0.44 μs *9* in 2006ToZW and 2007To23). Other: 240 ns *50* (2005WaZY, many authors are same as for 2009St28). Number of implanted fragments=2.4×10^5 (2012Ka36).

† From least-squares fit to Eγ data.

‡ From 2013La11, based on systematics and decay pattern.

γ(^{125}Ag)

Iγ normalization: Iγ(669.8γ)+Iγ(714.2γ)=100, assuming all the intensity is collected in these two γ rays. The conversion coefficients are considered as negligible.

The orderings of the 728-670 and 683-714 cascades is taken from 2013La13, these were not established in 2009St28 (also 2006ToZW), while the ordering of the 728-670 cascade was reversed in 2012Ka36 defining a level at 728 keV instead of that at 670 keV as in 2013La11 and 2009St28.

E$_\gamma$†	I$_\gamma$‡#	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.	α@	Comments
102.9 *5*	61.6 *20*	1501.2	(17/2$^-$)	1398.3	(13/2$^-$)	(E2)	1.31	α(exp)=1.48 *8* (2013La11) Additional information 6.
669.8 *5*	90 *3*	669.9	(11/2$^+$)	0.0	(9/2$^+$)			Additional information 1.
684.2 *5*	73 *3*	1398.3	(13/2$^-$)	714.2	(13/2$^+$)			Additional information 3.

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^{125}Ag IT decay (0.491 μs) 2013La11,2012Ka36,2009St28 (continued)

$\gamma(^{125}Ag)$ (continued)

E_γ[†]	I_γ[‡#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[@]	Comments
714.3 *5*	100	714.2	(13/2$^+$)	0.0	(9/2$^+$)			Additional information 2.
728.3 *5*	80 *3*	1398.3	(13/2$^-$)	669.9	(11/2$^+$)			Additional information 4.
764.8 *5*	13.8 *16*	1479.0	(15/2$^+$)	714.2	(13/2$^+$)			Additional information 5.
786.9 *5*	5.5 *12*	1501.2	(17/2$^-$)	714.2	(13/2$^+$)	[M2]	0.00557	Additional information 7.

[†] Weighted averaged values from 2013La11 and 2012Ka36. Some of the values given in 2006ToZW are more precise but these are in disagreement with the values in 2009St28 from the same group. The energies of all the four gamma rays in 2009St28 are systematically higher by ≈3 keV as compared to those in 2013La11, 2012Ka36 and 2006ToZW.

[‡] From 2013La11, where the values are most precisely given probably due to better statistics.

[#] For absolute intensity per 100 decays, multiply by 0.526 *9*.

[@] 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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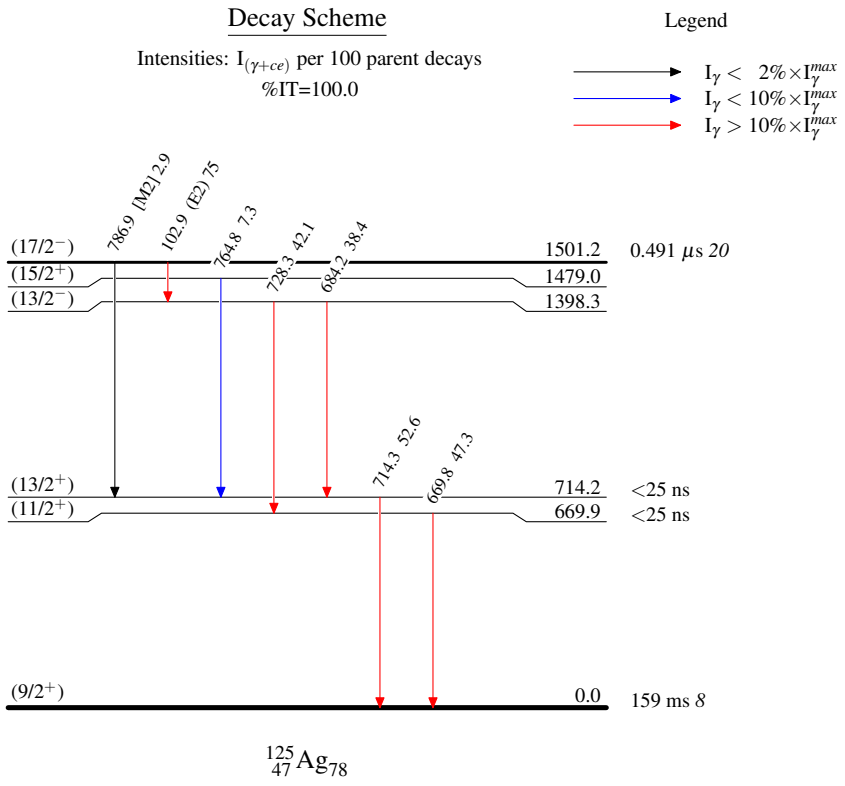

$^{125}_{47}Ag_{78}$