^{94}Ag p decay (0.39 s) 2005Mu15,2005Mu30,2009Ce04

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 112, 1163 (2011)	15-Dec-2010

Parent: ^{94}Ag: E=6.2×10^3 *20*; J$^\pi$=(21$^+$); T$_{1/2}$=0.39 s *4*; Q(p)=−370 *SY*; %p decay=4.1 *6*

^{94}Ag-E: Poorly established. E=6240 *2000* from E(p)=790 *20* to 4993 level, E(p)=1010 *30* to 4751 and S(p)(^{94}Ag)=370 *2000* (2009AuZZ; from systematics). 2008Ka30 measured mass excesses for ^{92}Rh and ^{94}Pd and deduced Q+ for ^{94}Ag(g.s.) ε decay from an extrapolation of Coulomb displacement energies for nearby N=Z nuclides; combining the implied ^{94}Ag S(2p)=4910 *360* with observed (2006Mu03) E(2p)=1900 *100* to ^{92}Rh(1549 level), they deduce E(^{94}Ag isomer)=8360 *370*. see 2007Pe14, 2008Ka30, 2008Ka19 for further discussion of this issue. note that S(2p)(^{94}Ag)=4100 *2040* from systematics In 2009AuZZ.

^{94}Ag-T$_{1/2}$: From 2005Mu30. other: 0.45 s *20* (2001Ki13).

^{94}Ag-%p decay: From %(790p)=1.9 *5* and %(1010p)=2.2 *4* (2005Mu15, 2006Mu03).

All information taken from 2005Mu15, unless stated otherwise.

2005Mu15, 2005Mu30: ^{94}Ag source produced in ^{58}Ni(^{40}Ca,p3n) reaction and subsequently ionized by the FEBIAD-E or FEBIAD-B2C ion source; reaction products mass-separated; detector array of three large-area Si multistrip detectors and 17 Ge crystals (total photopeak efficiency 3.2% at 1.33 MeV); measured Eγ, Iγ, $\gamma\gamma$ coin, p-γ coin.

2009Ce04: ^{94}Ag source produced from bombardment of natural Ni target by a 197-MeV ^{40}Ca beam; reaction products recoil In He plus ethylene glycol, are deposited within 0.20 s *5* on slowly rotating catcher wheel to remove long-lived β emitters, and collection spot viewed in low background area by an array of 24 DE1(gas)-DE2(gas)-E(Si) detector telescopes which can identify protons with E>400 keV; measured E(p), P-P coin.

2005Mu15 and 2005Mu30 assume that both of the observed proton branches originate from the same (21$^+$) isomer in ^{94}Ag.

^{93}Pd Levels

E(level)†	J$^\pi$‡	E(level)†	J$^\pi$‡	E(level)†	J$^\pi$‡
0.0@	(9/2$^+$)	2428.6@ *15*	(19/2$^+$)	3861.4@ *23*	(29/2$^+$)
984.0@ *10*	(13/2$^+$)	2595.6@ *18*	(21/2$^+$)	4137.2?& *24*	(29/2$^-$,31/2$^-$)#
1871.4@ *13*	(15/2$^+$)	2870.6@ *21*	(25/2$^+$)	4751?& *3*	(33/2$^-$,35/2$^-$)#
2079.6@ *13*	(17/2$^+$)	3384.8& *23*	(25/2$^-$,27/2$^-$)#	4993.4@ *25*	(33/2$^+$)
2232.5@ *14*	(17/2$^+$)	3734.0?& *24*	(29/2$^-$,31/2$^-$)#		

† From least-squares fit to Eγ, assigning 1 keV uncertainty to all data.

‡ From Adopted Levels; same As values proposed by 2005Mu15.

Tentative π=− level sequence built on (25/2$^-$,27/2$^-$) 3385 level; proposed because observation of proton branches in ^{94}Ag p decay with similar strength to 4994 and 4751 levels make it unlikely that the latter level also belongs in the π=(+) yrast sequence (2005Mu15).

@ Band(A): π=(+) sequence based on g.s..

& Band(B): π=(−) sequence. Based on (25/2$^-$,27/2$^-$) 3385 level. Analogous to π=− yrast sequences In N=47 isotones ^{89}Mo and ^{91}Ru.

γ(^{93}Pd)

E$_\gamma$†	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.‡	Comments
153	2232.5	(17/2$^+$)	2079.6	(17/2$^+$)		
167	2595.6	(21/2$^+$)	2428.6	(19/2$^+$)	D	
196	2428.6	(19/2$^+$)	2232.5	(17/2$^+$)	(D)	Iγ: I(196γ)/I(349γ)=1.0 *3* (from p-γ spectra gated on 790-keV protons) and 0.52 *17* (from p-γ spectra gated on 1010-keV protons).
208	2079.6	(17/2$^+$)	1871.4	(15/2$^+$)		
275	2870.6	(25/2$^+$)	2595.6	(21/2$^+$)		

Continued on next page (footnotes at end of table)

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$\gamma(^{93}Pd)$ (continued)

E_γ[†]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	α[#]	Comments
276[@]	4137.2?	$(29/2^-,31/2^-)$	3861.4	$(29/2^+)$	[E1]	0.00868 *13*	α=0.00868 *13*; α(K)=0.00759 *11*; α(L)=0.000889 *13*; α(M)=0.0001662 *24*; α(N+..)=2.78×10^{-5} α(N)=2.78×10^{-5} *4* Mult.: possibly E1 since γ connects level sequences with $\pi=(-)$ and $\pi=(+)$.
349	2428.6	$(19/2^+)$	2079.6	$(17/2^+)$			
349	3734.0?	$(29/2^-,31/2^-)$	3384.8	$(25/2^-,27/2^-)$			
361	2232.5	$(17/2^+)$	1871.4	$(15/2^+)$	(D)		
403	4137.2?	$(29/2^-,31/2^-)$	3734.0?	$(29/2^-,31/2^-)$			
514[@]	3384.8	$(25/2^-,27/2^-)$	2870.6	$(25/2^+)$	[E1]		Mult.: possibly E1 since γ connects level sequences with $\pi=(-)$ and $\pi=(+)$. Levels.
614	4751?	$(33/2^-,35/2^-)$	4137.2?	$(29/2^-,31/2^-)$			coincident with 153γ, 167γ, 275γ, 349γ, 403γ.
887	1871.4	$(15/2^+)$	984.0	$(13/2^+)$	(D)		
984	984.0	$(13/2^+)$	0.0	$(9/2^+)$	Q		
991	3861.4	$(29/2^+)$	2870.6	$(25/2^+)$	Q		
1096	2079.6	$(17/2^+)$	984.0	$(13/2^+)$	Q		
1132	4993.4	$(33/2^+)$	3861.4	$(29/2^+)$	Q		coincident with 153γ, 167γ, 208γ.

† From table I of 2005Mu15, unless stated otherwise.
‡ From Adopted Gammas.
\# 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.
@ Placement of transition in the level scheme is uncertain.

Protons (^{93}Pd)

E(p)	E(^{93}Pd)	I(p)	L	Comments
790 *20*	4993.4	46 *12*	[4]	E(p): from 2009Ce04; E=790 *30* reported by 2005Mu15.
1010[†] *30*	4751?	54 *10*	[3,5]	E(p): from 2005Mu15; 2009Ce04 fail to observe this proton group, possibly due to the lack of mass

† Placement of transition in the level scheme is uncertain.

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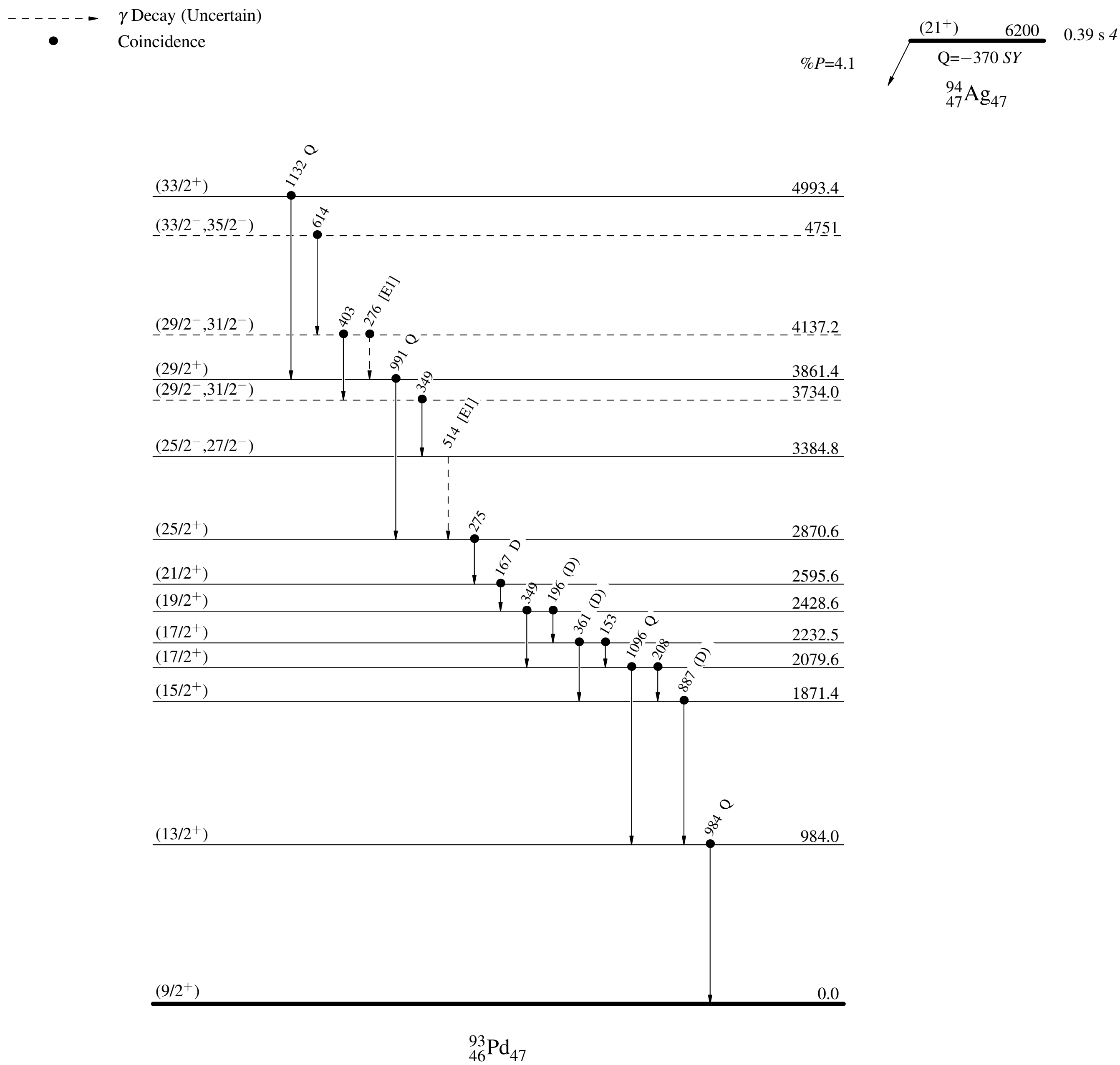
Legend

Decay Scheme



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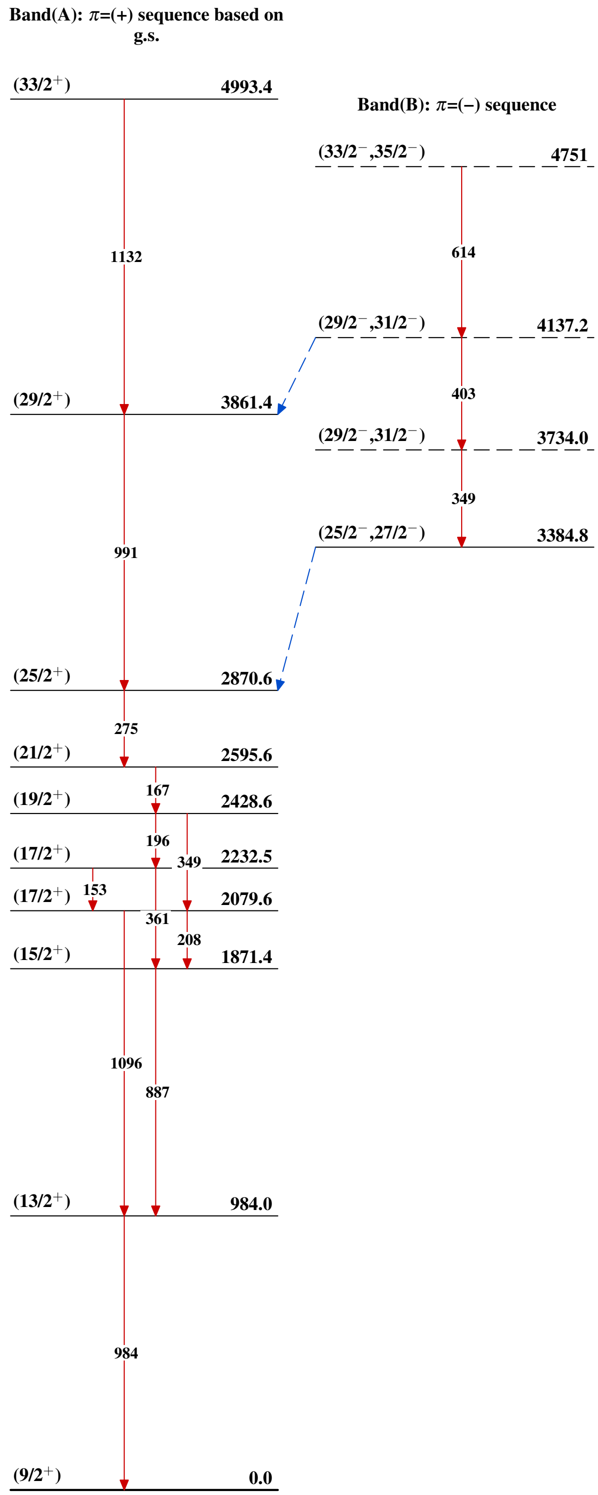

$^{93}_{46}Pd_{47}$