^{229}U ε decay 1982Ah08,1989AhZZ

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 109, 2657 (2008)	1-Jun-2008

Parent: ^{229}U: E=0.0; J^π=(3/2$^+$); $T_{1/2}$=58 min *3*; Q(ε)=1305 *14*; %ε+%β^+ decay≈80.0

Twelve of the nineteen observed γ-ray transitions have not been placed in the decay scheme. Thus, the decay scheme is incomplete, and the evaluators have not deduced neither absolute photon intensities nor ε branchings.

^{229}Pa Levels

E(level)‡#	Jπ†	Comments
0.0&	(5/2$^+$)	
11.2& *7*	(7/2$^+$)	
11.6@ *3*	(3/2$^-$)	Additional information 1.
133.9b *7*	(5/2$^-$)	
222.3a *8*	(3/2$^+$)	
253.2a *8*	(7/2$^+$)	
470.1 *8*		

† Adopted values.
‡ Deduced by evaluators from least-squares fit to γ-ray energies.
# There is no clear evidence of a parity doublet within 0.2 keV from ^{229}Pa g.s. as proposed in 1982Ah08. An alternative explanation is given rather than assuming the existence of a 0.22-keV level (1991Gr13). Evaluators have adjusted by 11.6 keV (from 1994Le22) all level energies in 1982Ah08. a half-life of 0.42 (3) μs was measured using delayed coincidences between protactinium x-K and 80-400-ev electrons (1982Ah08).
@ Band(A): 1/2$^-$[530].
& Band(B): 5/2$^+$[642].
a Band(C): 3/2$^+$[651].
b Band(D): 5/2$^-$[523] + 5/2$^-$[512].

γ(^{229}Pa)

Eγ†	Iγ‡	Ei(level)	J_i^π	Ef	J_f^π	Mult.#	α@	Comments
(11.0)		11.2	(7/2$^+$)	0.0	(5/2$^+$)			
11.6 *3*		11.6	(3/2$^-$)	0.0	(5/2$^+$)	(E1)		Eγ,Mult.: From ^{231}Pa(P,tγ) (1998Le15).
x66.15 *10*	0.51 *5*							
88.43 *10*	2.2 *2*	222.3	(3/2$^+$)	133.9	(5/2$^-$)	E1		
x114.03 *10*	0.47 *5*							
119.24 *10*	0.23 *3*	253.2	(7/2$^+$)	133.9	(5/2$^-$)	E1		
122.51 *10*	2.5 *2*	133.9	(5/2$^-$)	11.6	(3/2$^-$)	M1		
x126.4 *2*	0.13 *3*							
x132.51 *10*	0.35 *4*							
x144.68 *10*	0.40 *5*							
x198.83 *10*	2.2 *2*					M1	3.06	
x204.62 *10*	0.6 *1*							
211.09 *10*	0.43 *4*	222.3	(3/2$^+$)	11.2	(7/2$^+$)	[E2]		
216.82 *10*	0.61 *6*	470.1		253.2	(7/2$^+$)			α(E1)=0.0805, α(M1)=2.40, α(E2)=0.533.
x226.0 *10*	0.30 *5*							
x229.6 *10*	0.25 *4*							
x240.51 *10*	0.76 *7*							
241.92 *10*	0.56 *6*	253.2	(7/2$^+$)	11.2	(7/2$^+$)	[M1+E2]		
247.84 *10*	1.44 *12*	470.1		222.3	(3/2$^+$)			α(E1)=0.0592, α(M1)=1.66, α(E2)=0.335.

Continued on next page (footnotes at end of table)

^{229}U ε decay 1982Ah08,1989AhZZ (continued)

γ(^{229}Pa) (continued)

E_γ †	I_γ ‡	E_i(level)
x278.0 2	0.4 5	
x279.1 2	0.4 5	

† Measurements by 1982Ah08, 1989AhZZ.
‡ From 1989AhZZ. Photon intensities are relative to I(Pa kx-rays)=100.
# Determined by 1982Ah08 from ce measurements (data not given).
@ 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.
x γ ray not placed in level scheme.

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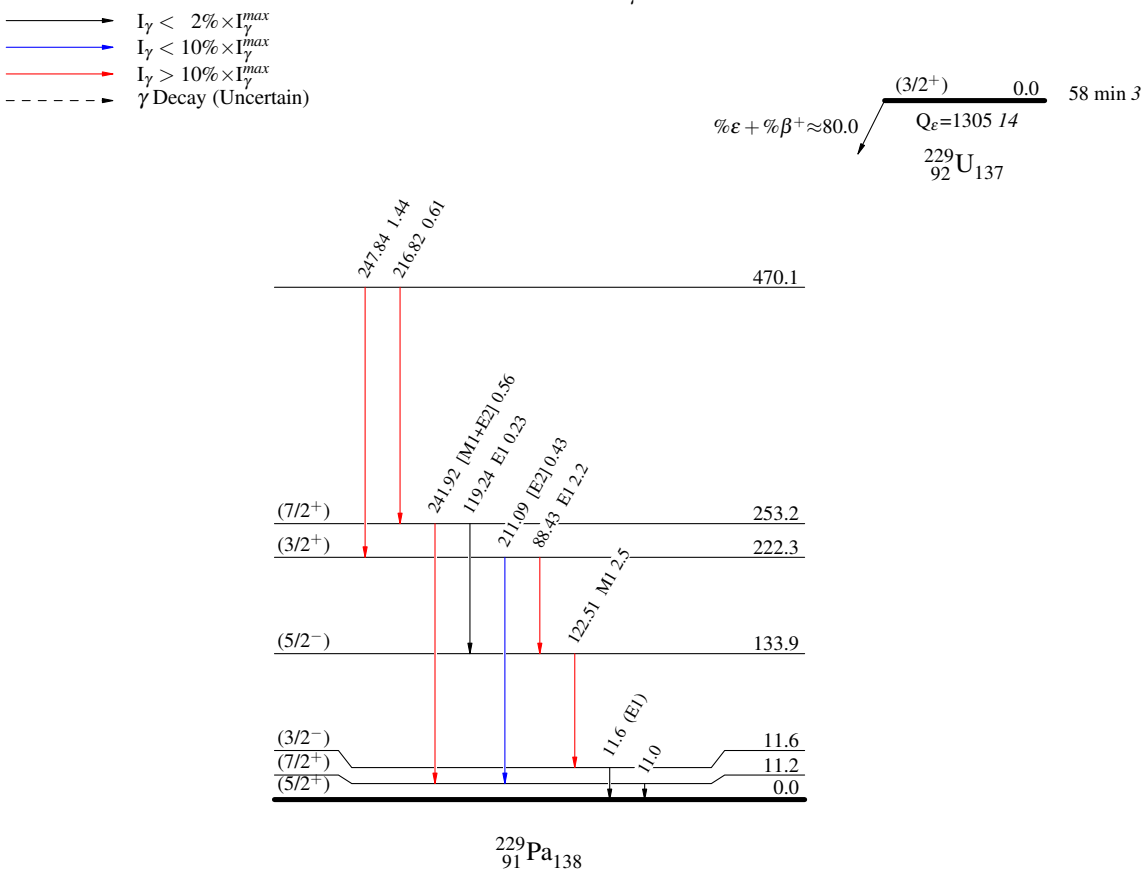
Decay Scheme

Intensities: Relative I_γ



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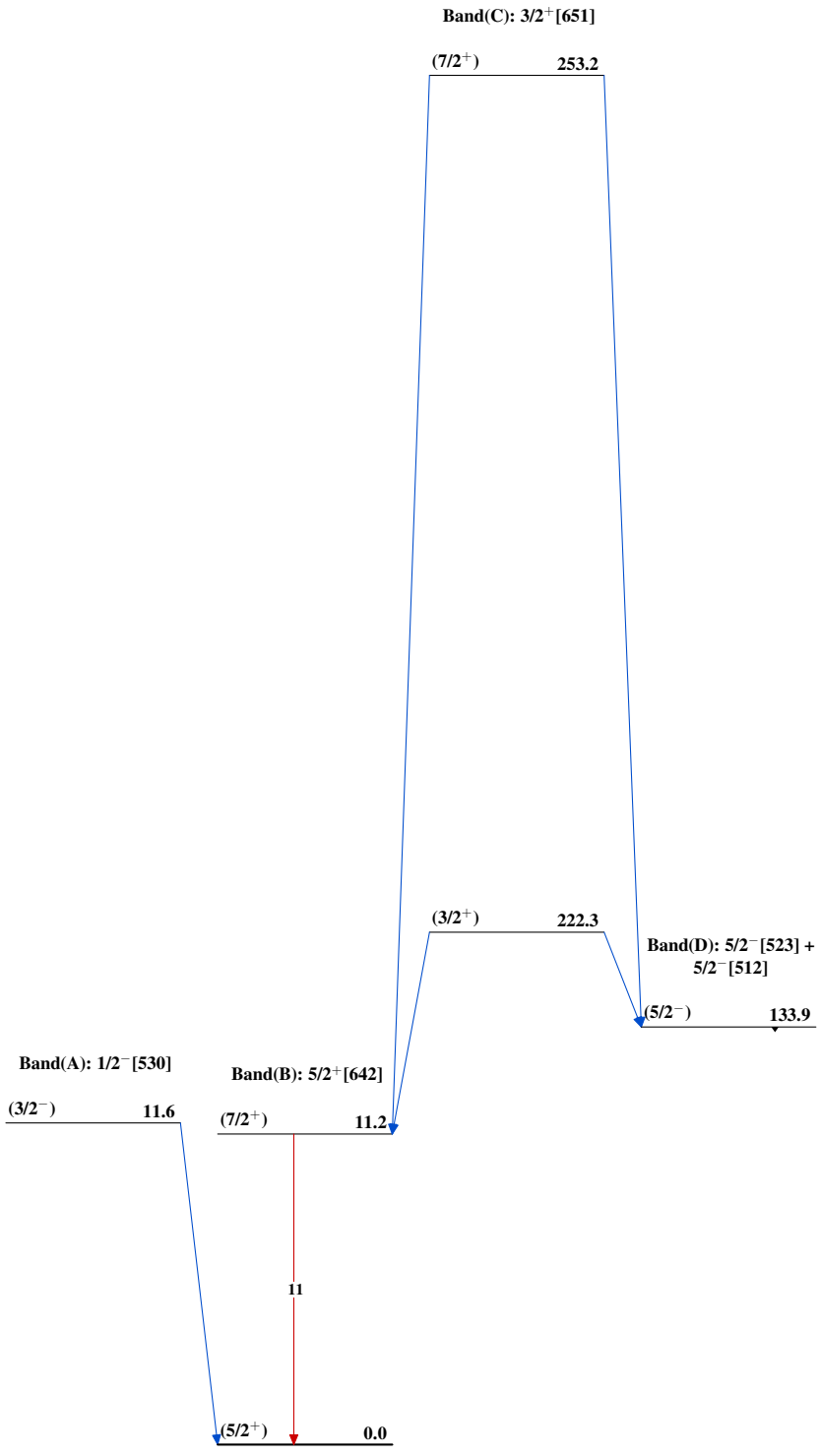

$^{229}_{91}Pa_{138}$