

²¹⁵Po α decay 1998Li53,1962Wa18

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	A. Sonzogni, G. Mukherjee, H. Huang, A. Tarazaga,		NDS 114, 661 (2013)	28-Feb-2013

Parent: ²¹⁵Po: E=0.0; J^π=9/2⁺; T_{1/2}=1.781 ms 4; Q(α)=7526.3 8; %α decay=99.99977 2

²¹⁵Po-Q(α): From 2012Wa38.

Others: 1992Wa24, 1970Da09, 1968Br17, 1965Va10, 1961Ry02.

1998Li53: Activity produced by ²¹⁹Rn nuclei recoiling from an ²²³Ra alpha emitting source and implanted on to a transport tape.

This tape moved between alpha- and γ-ray detectors. The ²¹⁵Po (1.781 ms) activity was measured in secular equilibrium with ²¹⁹Rn (3.96 s). Measured αγ coin. Detectors: Not specified for detecting alpha particles (possibly a silicon surface barrier detector); coaxial germanium detector for γ rays.

1962Wa18: Measured alpha spectrum. Detector: magnetic spectrometer.

²¹¹Pb Levels

E(level) [†]	J ^π @	Comments
0.0 [‡]	9/2 ⁺	
438.9 [‡] 2	(7/2 ⁺)	
584		
598 [‡]	(5/2 ⁺)	
643 [#]	11/2 ⁺	
733 [‡]	(13/2 ⁺)	
762?	(3/2 ⁺)	E(level): level has not been adopted.
815	(9/2 ⁺)	
894 [‡]	(11/2 ⁺)	

[†] From Eγ data.

[‡] Configuration=(ν 2g_{9/2})⁺³.

[#] Configuration=((ν 2g_{9/2})⁺²(ν 1i_{11/2})⁺¹).

@ From Adopted Levels.

α radiations

Eα [‡]	E(level)	Iα ^{‡#}	HF [†]	Comments
6519 20	894	≈3×10 ⁻⁴	≈372	
6589 8	815	20×10 ⁻⁴ 6	111 34	
6636 [@] 15	762?	≈3×10 ⁻⁴	≈1166	
6671 10	733	8×10 ⁻⁴ 3	5.6×10 ² 21	
6754 10	643	8×10 ⁻⁴ 3	1.19×10 ³ 45	
6802 8	598	1.6×10 ⁻³ 5	8.6×10 ² 27	
6819 15	584	4×10 ⁻⁴ 2	3.9×10 ³ 20	
6954 3	438.9	0.06 2	83 28	Eα≈6956.7 keV, Iα≈0.034 (1962Wa18,1971Gr17).
7386.1 8	0.0	100	1.362 6	Eα: from 1971Gr17 (adjusted for change in calibration standard by 1991Ry01).

[†] Using r₀(²¹¹Pb)=1.5401 8; interpolated value deduced from r₀(²¹⁰Pb)=1.5394 6 and r₀(²¹²Pb)=1.5408 9 (1998Ak04).

[‡] From 1998Li53, unless otherwise specified. Evaluator has adjusted all energies to Eα=7386.1 keV 8 (1971Gr17,1991Ry01) for the group that populates the ground state.

[#] For absolute intensity per 100 decays, multiply by .9999977 2.

@ Existence of this branch is questionable.

^{215}Po α decay 1998Li53,1962Wa18 (continued) $\gamma(^{211}\text{Pb})$

E_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	α^\ddagger	Comments
(310) 438.9 2	894 438.9	(11/2 ⁺) (7/2 ⁺)	584 0.0	9/2 ⁺	E2(+M1)	0.10 6	$\alpha(\text{K})=0.08\ 5$; $\alpha(\text{L})=0.015\ 6$; $\alpha(\text{M})=0.0037\ 13$; $\alpha(\text{N})=0.0009\ 4$; $\alpha(\text{O})=0.00018\ 7$ $\alpha(\text{P})=1.8\times 10^{-5}\ 10$ Mult.: from K x ray/I γ =0.034 10. α : for $\delta=1$. $E_\gamma=438.8\ \text{keV}\ 3$, I $\gamma(\%) \approx 0.04$ (1977Ma29).
584	584		0.0	9/2 ⁺			
598	598	(5/2 ⁺)	0.0	9/2 ⁺			
643	643	11/2 ⁺	0.0	9/2 ⁺			
733	733	(13/2 ⁺)	0.0	9/2 ⁺			
815	815	(9/2 ⁺)	0.0	9/2 ⁺			
894	894	(11/2 ⁺)	0.0	9/2 ⁺			

[†] ΔE uncertainties are ≥ 1.0 keV for all γ rays, except for 438.9 γ (1998Li53).

[‡] 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.

 ^{215}Po α decay 1998Li53,1962Wa18

Legend

Decay Scheme----- \rightarrow γ Decay (Uncertain)