

**<sup>211</sup>Ra IT decay 2006Ha17,2004He25**

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	D. Abriola, P. Demetriou, M. Hassanvand, M. Hussain		NDS 114, 661 (2013)	28-Feb-2013

Parent: <sup>211</sup>Ra: E=1198.1; J<sup>π</sup>=(13/2<sup>+</sup>); T<sub>1/2</sub>=4.0 μs 5; %IT decay=100.0

**2004He25**: produced using the <sup>204</sup>Pb(<sup>12</sup>C,5n) reaction at GSI. Evaporation residues were separated from the primary beam by the velocity filter SHIP and were implanted into a 16-strip PIPS detector. γ-rays were detected in prompt or delayed coincidence using a HP Ge-Detector and a clover detector consisting of four Ge crystals. Measured E<sub>γ</sub>, I<sub>γ</sub>, T<sub>1/2</sub>.

**2006Ha17**: produced in commissioning experiment using <sup>174</sup>Yb(<sup>40</sup>Ar,3n) reaction. Evaporation residues were transported by the VASSILISSA separator and implanted into a 16-strip position-sensitive Si detector. The focal plane detector is surrounded by a GABRIELA setup of seven Ge detectors, six of which are inside BGO Compton shields. Measured E<sub>γ</sub>, T<sub>1/2</sub> using γ-spectra from unsuppressed detector. Authors state their value T<sub>1/2</sub>=9.7 μs 6 requires further independent confirmation therefore evaluators have not used it to obtain average values.

<sup>211</sup>Ra Levels

E(level) <sup>†</sup>	J <sup>π</sup> <sup>†</sup>	T <sub>1/2</sub> <sup>†</sup>
0.0	5/2 <sup>(-)</sup>	13 s 2
802.0 6	(9/2 <sup>-</sup> )	
1198.1 8	(13/2 <sup>+</sup> )	4.0 μs 5

<sup>†</sup> From Adopted Levels.

γ(<sup>211</sup>Ra)

Two unplaced γ-lines of 395.6 keV 5 and 801.2 keV 5 observed by **2004Re04** agree with data of **2004He25**.

E <sub>γ</sub>	I <sub>γ</sub> <sup>†</sup>	E <sub>i</sub> (level)	J <sub>i</sub> <sup>π</sup>	E <sub>f</sub>	J <sub>f</sub> <sup>π</sup>	Mult.	α <sup>‡</sup>	Comments
396.1 6	48.3 4	1198.1	(13/2 <sup>+</sup> )	802.0	(9/2 <sup>-</sup> )	M2	1.014 15	α(K)=0.759 12; α(L)=0.192 3; α(M)=0.0479 8; α(N)=0.01275 19; α(O)=0.00290 5 α(P)=0.000499 8; α(Q)=3.6×10 <sup>-5</sup> 6 B(M2)(W.u.)=0.0111 14 From missing I <sub>γ</sub> <b>2004He25</b> obtain α(exp)=1.07 4. From line intensity of x-rays they determine experimental K/(L+M) conversion ratio α <sub>k</sub> /α=0.44 3. Mult.: From comparison of α(exp) and α <sub>k</sub> /α with α(M2,theory)=1.014 and α(E4,theory)=1.387 M2 and E4 possible; Weisskopf estimates for M2 T <sub>1/2</sub> =0.09 μs 15 and E4 T <sub>1/2</sub> =172 s 5 compared with measured T <sub>1/2</sub> =4.0 μs 5 rule out E4.
802.0 6	100	802.0	(9/2 <sup>-</sup> )	0.0	5/2 <sup>(-)</sup>	(E2)	0.01387 20	α(K)=0.01037 15; α(L)=0.00263 4; α(M)=0.000653 10; α(N)=0.0001721 25 α(O)=3.84×10 <sup>-5</sup> 6; α(P)=6.37×10 <sup>-5</sup> 6; α(Q)=3.59×10 <sup>-7</sup> 5

<sup>†</sup> Absolute intensity per 100 decays.

<sup>‡</sup> 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.

**$^{211}\text{Ra}$  IT decay 2006Ha17,2004He25**Decay Scheme

Intensities:  $I_{(\gamma+ce)}$  per 100 parent decays  
%IT=100.0

## Legend

- $I_{\gamma} < 2\% \times I_{\gamma}^{max}$
- $I_{\gamma} < 10\% \times I_{\gamma}^{max}$
- $I_{\gamma} > 10\% \times I_{\gamma}^{max}$

