

$^{211}\text{Fr}$   $\alpha$  decay 2005Ku06

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev, S. Lalkovski		NDS 112, 707 (2011)	1-Aug-2010

Parent:  $^{211}\text{Fr}$ :  $E=0.0$ ;  $J^\pi=9/2^-$ ;  $T_{1/2}=3.10$  min 2;  $Q(\alpha)=6663$  4;  $\% \alpha$  decay=87 3

$^{211}\text{Fr}$ - $J^\pi, T_{1/2}$ : From 2004Br45.

$^{211}\text{Fr}$ - $Q(\alpha)$ : From  $E\alpha=6537$  keV 4 (2005Ku06). Other: 6900 keV 50 (2003Au03).

$^{211}\text{Fr}$ - $\% \alpha$  decay: From 2005Ku06 using ratio of number of  $\alpha$ -counts from  $^{211}\text{Fr}$  and  $^{215}\text{Ac}$  decays in a singles  $\alpha$ -spectrum. An  $\alpha$ -branch of 99.910% 20 (2004Br45) and an intensity of 99.57% 7 for the g.s. to g.s.  $\alpha$  decay of  $^{215}\text{Ac}$  were assumed.

2005Ku06:  $^{211}\text{Fr}$  produced in  $^{209}\text{Bi}(^{12}\text{C},6n)^{215}\text{Ac}$  reaction at  $E(^{12}\text{C})=7.1$  MeV per nucleon following the  $\alpha$ -decay of  $^{215}\text{Ac}$ .

Velocity filter SHIP at GSI. Reaction products were implanted into a position-sensitive 16-strip PIPS Si detector. Measured  $E_\gamma$ ,

$E_\alpha$ ,  $I_\gamma$ ,  $I_\alpha$ ,  $\gamma\gamma$ ,  $\alpha$ - $\gamma$  coin with a Ge clover detector placed behind Si detector.

Others: 1967Va20 and 1964Gr04.

 $^{207}\text{At}$  Levels

<u><math>E(\text{level})^\dagger</math></u>	<u><math>J^\pi^\ddagger</math></u>	<u><math>T_{1/2}^\ddagger</math></u>
0	$9/2^-$	1.81 h 3
344.50 20	$7/2^-$	
643.9 5	$11/2^-$	
686.7 6	$13/2^-$	

$^\dagger$  From a least-squares fit to  $E_\gamma$ .

$^\ddagger$  From Adopted Levels.

 $\alpha$  radiations

<u><math>E\alpha^\dagger</math></u>	<u><math>E(\text{level})</math></u>	<u><math>I\alpha^\ddagger@</math></u>	<u>HF#</u>	Comments
5866 6	686.7	0.009 5	15 9	
5905 7	643.9	0.006 4	36 25	
6199 5	344.50	0.041 13	116 37	
6537 4	0	99.943 22	1.26 6	$E\alpha$ : Others: 6533 keV 5 (1967Va20). A value of 6534 keV 5 is recommended in 1991Ry01.

$^\dagger$  From 2005Ku06.

$^\ddagger$  From 2005Ku06, estimated indirectly from  $I_\gamma$  in  $\alpha$ - $\gamma$  coin data.

#  $r_0(^{207}\text{At})=1.462$  5, unweighted average from values for neighboring even-even  $^{208}\text{Rn}$  ( $r_0=1.466$  8) and  $^{206}\text{Po}$  ( $r_0=1.4569$  2) nuclei, deduced by forcing  $Hf(E\alpha)=1.0$ .

@ For absolute intensity per 100 decays, multiply by 0.87 3.

 $\gamma(^{207}\text{At})$ 

<u><math>E_\gamma^\dagger</math></u>	<u><math>E_i(\text{level})</math></u>	<u><math>J_i^\pi</math></u>	<u><math>E_f</math></u>	<u><math>J_f^\pi</math></u>	<u>Mult.<math>^\ddagger</math></u>	<u><math>\delta^\ddagger</math></u>
344.5 2	344.50	$7/2^-$	0	$9/2^-$	E2+M1	3.1 +19-7
643.9 5	643.9	$11/2^-$	0	$9/2^-$	M1+E2	
686.7 6	686.7	$13/2^-$	0	$9/2^-$	E2	

$^\dagger$  From 2005Ku06.

$^\ddagger$  From adopted gammas.

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## Decay Scheme

