

^{207}Rn IT decay **2006Ha17,1974Re06**

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

Parent: ^{207}Rn : E=899.1 10; $J^\pi=13/2^+$; $T_{1/2}=184.5 \mu\text{s}$ 9; %IT decay=100.0

2006Ha17: Produced using $^{164}\text{Dy}(^{48}\text{Ca},5n)$ reaction. Evaporation residues were transported by the VASSILISSA separator and implanted into a DSSD of GABRIELA setup surrounded by seven HPGE detectors. Measured: $E\gamma$, $I\gamma$, ce, $T_{1/2}$.

1974Re06: Produced using $^{197}\text{Au}(^{14}\text{N},4n)$ reaction and also by bombardment of natural Hg targets with ^{12}C ions. $E(^{14}\text{N})=70\text{-}120$ MeV, pulsed beam with 2 ms beam-on and 98 ms beam-off periods. Detectors: several Ge(Li) detectors varying in size from 8 to 40 cm^2 . Measured: $E\gamma$, $I\gamma$, $T_{1/2}$, and γ -K x ray coin.

K x ray=77% 7 (**1974Re06**).

 ^{207}Rn Levels

E(level) [†]	J^π [‡]	$T_{1/2}$	Comments
0	$5/2^-$	9.25 min 17	$J^\pi, T_{1/2}$: From Adopted Levels. configuration: $((\pi h_{9/2})_{0+}^{+4}(\nu f_{5/2})^{-1})$.
665.10 10 899.1 10	$9/2^-$ $13/2^+$	184.5 μs 9	$T_{1/2}$: From $^{234}\text{Ce}(\text{K})(t)$ in 2006Ha17 . Other: 181 μs 18 from 665.1 $\gamma(t)$ in 1974Re06 . configuration: $((\pi h_{9/2})_{0+}^{+4}(\nu i_{13/2})^{-1})$.

[†] From a least-squares fit to $E\gamma$.

[‡] From deduced γ -ray transition multiplicities in **1974Re06**, unless otherwise specified.

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

$E\gamma$ [‡]	$I\gamma$ ^{‡#}	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	α [†]	Comments
234 1	21 5	899.1	$13/2^+$	665.10	$9/2^-$	M2	4.94 10	$\alpha(\text{K})=3.55$ 7; $\alpha(\text{L})=1.042$ 23; $\alpha(\text{M})=0.264$ 6; $\alpha(\text{N}+..)=0.0870$ 19 $\alpha(\text{N})=0.0697$ 15; $\alpha(\text{O})=0.0151$ 4; $\alpha(\text{P})=0.00214$ 5 234 γ was not seen in beam-on spectra, and hence was assigned to depopulate the isomer directly. Mult.: $\alpha(\text{K})_{\text{exp}}=3.6$ 9 from K x ray/ $I\gamma$ in 1974Re06 .
665.1 1	98 2	665.10	$9/2^-$	0	$5/2^-$	E2	0.0185	$\alpha(\text{K})=0.01354$ 19; $\alpha(\text{L})=0.00374$ 6; $\alpha(\text{M})=0.000932$ 13; $\alpha(\text{N}+..)=0.000301$ 5 $\alpha(\text{N})=0.000242$ 4; $\alpha(\text{O})=5.15 \times 10^{-5}$ 8; $\alpha(\text{P})=6.87 \times 10^{-6}$ 10 665.1 γ was in prompt (40 ns) coincidence with Rn K x ray. Mult.: Anisotropy of 20% 15 was measured for 665.1 γ (1974Re06), thus suggesting mult=Q. The balance of the level scheme requires mult.=E2.

[†] Additional information 1.

[‡] From **1974Re06**.

Absolute intensity per 100 decays.

^{207}Rn IT decay 2006Ha17,1974Re06**Decay Scheme**Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
%IT=100.0**Legend**

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

