

^{206}Rn $\varepsilon+\beta^+$ decay **1975ZeZY**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 201,346 (2025)	21-Jan-2025

Parent: ^{206}Rn : $E=0.0$; $J^\pi=0^+$; $T_{1/2}=5.67$ min 17; $Q(\varepsilon)=3306$ 16; $\% \varepsilon + \% \beta^+$ decay=38 3

^{206}Rn - $T_{1/2}$: From Adopted Levels for ^{206}Rn .

^{206}Rn - $Q(\varepsilon+\beta^+)$: From 2021Wa16.

1975ZeZY: Source produced in a bombardment of a thick (500 g) ThO target with protons ($E(p)=660$ MeV). Online mass separator was used to selected the recoils; Measured: E_γ , I_γ , $\gamma\gamma$ coin with Ge(Li) detectors.

 ^{206}At Levels

E(level) [†]	J^π	Comments
0.0+x	(7 ⁺)	Additional information 1.
61.92+x 9		
195.78+x? 14		
386.56+x 13		
497.74+x 14		
527.54+x 22		
594.89+x? 15		
869.04+x 22		
1159.73+x 25		

[†] Decay scheme is from **1975ZeZY**, but the authors indicated that it is tentative. Detailed information on J^π , Mult. and $\gamma\gamma$ coin. data was not presented in **1975ZeZY**.

 $\gamma(^{206}\text{At})$

I _{γ} normalization: The spectroscopic information is insufficient to deduce absolute γ -ray intensities.

E_γ	I_γ [†]	$E_i(\text{level})$	E_f	J_f^π	E_γ	I_γ [†]	$E_i(\text{level})$	E_f	J_f^π
62.0 1	14.3 15	61.92+x	0.0+x	(7 ⁺)	^x 444.2 3	28 3			
97.2 1	5.2 6	594.89+x?	497.74+x		^x 458.5 5	5.0 10			
^x 101.2 2	3.6 4				465.8 5	3.7 6	527.54+x	61.92+x	
134.2 2	5.0 6	195.78+x?	61.92+x		482.8 3	59 7	869.04+x	386.56+x	
^x 186.5 3	6.8 8				^x 485.6 3	31 4			
195.5 2	11.7 15	195.78+x?	0.0+x	(7 ⁺)	497.7 2	104 15	497.74+x	0.0+x	(7 ⁺)
208.1 2	26.3 26	594.89+x?	386.56+x		527.4 3	25 3	527.54+x	0.0+x	(7 ⁺)
^x 213.4 4	11.0 17				^x 536.6 3	16.5 26			
^x 215.4 4	4.0 8				632.1 3	15.0 23	1159.73+x	527.54+x	
290.9 4	7.5 10	1159.73+x	869.04+x		^x 643.2 6	6.7 10			
302.1 3	53 7	497.74+x	195.78+x?		^x 716.9 6	6.8 10			
324.5 2	100	386.56+x	61.92+x		^x 738.5 5	15.5 20			
^x 350.7 3	12.7 20				^x 757.1 5	10.7 15			
371.1 3	52 6	869.04+x	497.74+x		773.1 4	59.6 65	1159.73+x	386.56+x	
386.6 2	63 6	386.56+x	0.0+x	(7 ⁺)	^x 795.1 4	10.0 17			
436.3 4	5.5 16	497.74+x	61.92+x						

[†] I(K α x ray)=470 50 and I(K β x ray)=140 15 (**1975ZeZY**).

^x γ ray not placed in level scheme.

$^{206}\text{Rn } \epsilon + \beta^+ \text{ decay } \underline{1975\text{ZeZY}}$

Decay Scheme

Intensities: Relative I_γ

Legend

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

$0^+ \quad 0.0 \quad 5.67 \text{ min } 17$
 $Q_\epsilon = 3306 \text{ keV}$
 $^{206}_{86}\text{Rn}_{120}$
 $\% \epsilon + \% \beta^+ = 38$

