202 Rn α decay (9.7 s) 1995Bi17,1992Wa29,1967Va17

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Parent: 202 Rn: E=0; J^{π} =0+; $T_{1/2}$ =9.7 s 1; $Q(\alpha)$ =6773.7 18; % α decay=78 8

²⁰²Rn-T_{1/2}: Weighted average of 10.3 s 4 (1996Ta18), 9.5 s 2 (1992Wa29), 9.85 s 20 (1971Ho01) in α decay. Others: 10 s I (1987He10), 10.5 s I5 (1969Ha03), 13 s 2 (1967Va17).

Sources produced by 197 Au(14 N,xn) (1967Va17), 16 O on Pt (1967Va17), and protons on thorium (1971Ho01). α branching of 202 Rn was from parent-daughter (E α_1 -E α_2) correlations (1987He10). Others: 80-100% (1993Wa04), ≥80% (1992Wa29), 85% 15 (1969Ha03,1986BrZQ), 93% (1971Ho01), 85% recommended by 1991Ry01.

¹⁹⁸Po Levels

E(level)[†] $J^{\pi \dagger}$ $T_{1/2}$ Comments $0.0 0^+ 1.760 min 24$ $604.94 10 2^+$ $816.0 10 0^+ < 0.4 ns$ $T_{1/2}$: From $\alpha \gamma(t)$ (1992Wa29).

α radiations

Εα	E(level)	$I\alpha^{\dagger \#}$	HF [‡]	Comments
5836 5	816.0	0.0018 6	20 7	Eα: From 1992Wa29. Others: $E\alpha$ =5841 measured by 1994Wa13. $E\alpha$ =5839.7 18 is calculated from $Q(\alpha)$ =6773.7 18 and $E(\text{level})$ =816.0 10.
				I α : Absolute α intensity was measured by 1994Wa13, and the ratio is listed: I α (6639.5 α)/I α (5841 α)=(80-100)/(0.0014-0.0018). In 1995Bi17, this intensity ratio is quoted as 100/0.0018 δ , referring to their earlier work in 1994Wa13.
(6046 2)	604.94	< 0.018	>18	E α : This α transition was not observed; its energy is calculated from Q(α)=6773.7 18 and E(level)=604.94 10.
				I α : A lower limit of 18 was calculated by 1995Bi12 for HF from their experimental upper limit for its intensity which is not quoted. From HF>18, we calculate $I\alpha(6046\alpha)<0.018$.
6639.6 18	0.0	99.9982 6	1.0	E α : Recent measurements are 6640.9 25 (1993Wa04), 6639 1 (1995Le04) and 6641 1 (1996Ta18; the energy uncertainty is statistical only). E α =6637 3 was recommended by 1991Ry01 from earlier measurements. E α =6639.6 18 is calculated from Q(α)=6773.7 18.

[†] Intensities per 100 α decays are deduced from relative α intensities listed by 1995Bi17.

$\gamma(^{198}Po)$

E_{γ}^{\dagger}	$E_i(level)$	\mathbf{J}_i^{π}	E_f	\mathbf{J}_f^{π}	Mult.	$I_{(\gamma+ce)}$ ‡#	Comments
211	816.0	0^{+}	604.94	2+	<u> </u>	31 25	
816	816.0	0_{+}	0.0	0_{+}	E0	69 25	Mult.: From $T_{1/2}$, strong(α)(ce) and (α)(K x ray) coin, and absence
							of $(\alpha)(816\gamma)$.

[†] From 1992Wa29.

[†] From Adopted Levels.

 $^{^{\}ddagger}$ r₀(¹⁹⁸Po)=1.516 7 is calculated from HF(6639.6 α)=1.0.

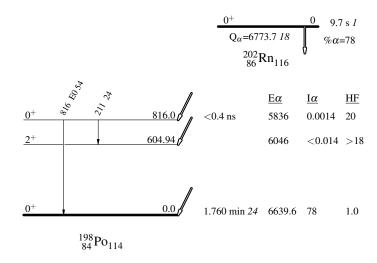
[#] For absolute intensity per 100 decays, multiply by 0.78 8.

[‡] Relative intensity from each level.

[#] For absolute intensity per 100 decays, multiply by 0.00179 19.

$^{202} \rm{Rn} \; \alpha \; decay \; (9.7 \; s) \qquad 1995 Bi17,1992 Wa29,1967 Va17$

Decay Scheme



 $^{198}_{84}\mathrm{Po}_{114}\text{-}2$