^{224}Th α decay 1970Va13,1961Ru06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 112, 1115 (2011)	31-Oct-2010

Parent: ^{224}Th: E=0; $J^\pi=0^+$; $T_{1/2}$=1.05 s *2*; Q(α)=7298 *6*; %α decay=100.0
Additional information 1.

^{220}Ra Levels

E(level)†	J^π†
0	0^+
178.4 *1*	2^+
412.9 *1*	(1^-)
474.1 *2*	(3^-)

† From Adopted Levels.

α radiations

Eα†	E(level)	Iα†@	HF#	Comments
6700	474.1	0.3‡ *1*	4.5 *10*	
6770	412.9	1.2‡ *4*	2.0 *5*	
7000 *10*	178.4	19 *2*	0.96 *7*	Eα: From 1970Va13. Others: 7000 *20* (1989An13), 6990 (1961Ru06), 6984 *15* (2000He17). Iα: Others: 20 *5* (1989An13), 19 *3* (1970Va13). Iα=17 *4*, 13 *3* (2000He17).
7170 *10*	0	79 *2*	1.00	Iα: Others: 80 *5* (1989An13), Iα=100−Iα(7000)=81 *3* (1970Va13), 87 *8* (2000He17). Eα: From 1970Va13. Others: 7170 *20* (1989An13), 7156 *10* (2000He17).

† From 1961Ru06, unless otherwise noted.
‡ From γ-ray transition intensity balance.
# HF(7170α)=1.00 yields $r_0(^{220}Ra)$=1.536 *6*.
@ Absolute intensity per 100 decays.

$\gamma(^{220}Ra)$

Iγ normalization: Iγ are photons per 100 α decays.

E_γ‡	I_γ‡#	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α†	Comments
177 *2*	9 *2*	178.4	2^+	0	0^+	E2	0.92 *5*	α(K)=0.203 *5*; α(L)=0.53 *3*; α(M)=0.143 *8*; α(N+..)=0.0470 *25* α(N)=0.0377 *20*; α(O)=0.0081 *5*; α(P)=0.00119 *7*; α(Q)=1.02×10^{-5} *4* Mult.: α(K)exp=0.22 from (K x ray)(α)/(γ)(α) (1961Ru06); theory: α(K)=0.203.
235 *3*	0.4 *3*	412.9	(1^-)	178.4	2^+	[E1]	0.0616 *21*	α(K)=0.0494 *17*; α(L)=0.0093 *4*; α(M)=0.00223 *8*; α(N+..)=0.00073 *3* α(N)=0.000582 *21*; α(O)=0.000130 *5*; α(P)=2.14×10^{-5} *8*; α(Q)=1.32×10^{-6} *5*
297 *3*	0.3 *1*	474.1	(3^-)	178.4	2^+	[E1]	0.0360 *10*	α(K)=0.0290 *8*; α(L)=0.00530 *15*; α(M)=0.00126 *4*; α(N+..)=0.000418 *12*

Continued on next page (footnotes at end of table)

^{224}Th α decay 1970Va13,1961Ru06 (continued)

$\gamma(^{220}Ra)$ (continued)

E_γ [‡]	I_γ [‡#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α [†]	Comments
								α(N)=0.000331 *10*; α(O)=7.39×10^{-5} *21*; α(P)=1.23×10^{-5} *4*; α(Q)=7.96×10^{-7} *21*
410 *3*	0.8 *3*	412.9	(1$^-$)	0	0$^+$	[E1]	0.0178 *4*	α(K)=0.0144 *3*; α(L)=0.00254 *6*; α(M)=0.000602 *13*; α(N+..)=0.000200 *5* α(N)=0.000158 *4*; α(O)=3.55×10^{-5} *8*; α(P)=5.98×10^{-6} *13*; α(Q)=4.09×10^{-7} *9*

† Additional information 2.
‡ From 1961Ru06. RI are photons per 100 α decays.
# Absolute intensity per 100 decays.

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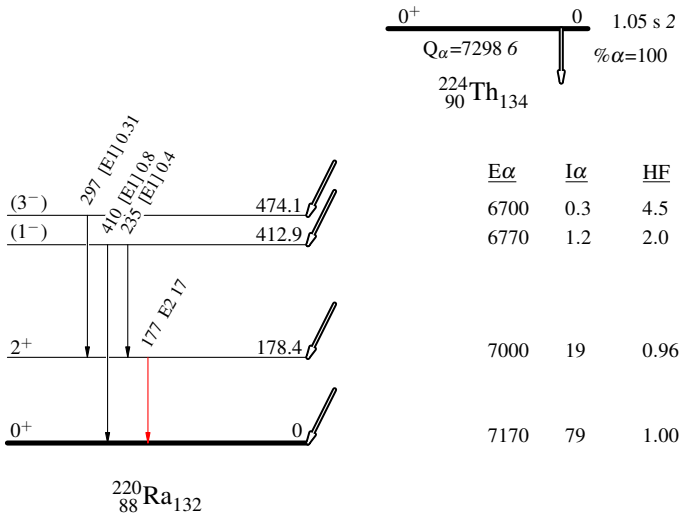
Decay Scheme

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

Legend

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



Eα	Iα	HF
6700	0.3	4.5
6770	1.2	2.0
7000	19	0.96
7170	79	1.00

$^{220}_{88}Ra_{132}$