^{183}Re IT decay (1.04 ms) 1981Av04,1966Em02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 134, 149 (2016)	15-Apr-2015

Parent: ^{183}Re: E=1906.79 *11*; $J^\pi=(25/2)^+$; $T_{1/2}$=1.04 ms *4*; %IT decay=100.0

1966Em02: isomer produced In reaction ^{181}Ta(α,2n), Eα=22-38 MeV; Ge and Ge(Li) detectors (for γ-rays) and single-gap wedge spectrometer (for ce); measured Eγ, I(K x ray), I(ce), isomer $T_{1/2}$; deduced α(K)exp(194γ).

1981Av04: isomer from ^{181}Ta(α,n) and ^{182}W(α,t); Ge(Li) detector (FWHM=3 keV At 662 keV); measured Eγ, Iγ, isomer $T_{1/2}$.

Total energy release for this decay scheme is 1865 *91* cf. QxBR=1906.9 *5*.

^{183}Re Levels

E(level)†	J^π‡	$T_{1/2}$	Comments
0#	$5/2^+$		
114.48# *16*	$7/2^+$		
259.88# *20*	$9/2^+$		
435.25# *24*	$11/2^+$		
639.2# *3*	$13/2^+$		
870.6# *3*	$15/2^+$		
1127.6# *4*	$17/2^+$		
1409.0# *4*	$19/2^+$		
1713.0# *8*	$21/2^+$		
1906.9 *5*	$(25/2)^+$	1.04 ms *4*	%IT=100 E(level): consistent with adopted E(level)=1907.21 *15*. $T_{1/2}$: weighted average of 1.02 *6* ms (1966Em02) and 1.05 *6* ms (1981Av04). Other value: 0.90 *18* ms (1968Io01).

† From least-squares fit to Eγ, omitting the 260γ from the 260 level.
‡ From Adopted Levels.
# Band(A): π 5/2[402] band (1966Em02).

$\gamma(^{183}Re)$

Iγ normalization: from Ti(194γ)=100%.

Eγ‡	Iγ‡@	E_i(level)	J_i^π	E_f	J_f^π	Mult.#	δ#	α†	Comments
114.48 *16*	23 *6*	114.48	$7/2^+$	0	$5/2^+$	M1+E2	0.24 *4*	3.45 *6*	α(K)=2.78 *6*; α(L)=0.514 *18*; α(M)=0.119 *5* α(N)=0.0288 *11*; α(O)=0.00473 *15*; α(P)=0.000303 *7* Eγ: weighted average of 114.7 *2* (1981Av04) and 114.36 *15* (1966Em02).
145.35 *12*	43 *9*	259.88	$9/2^+$	114.48	$7/2^+$	M1+E2	0.37 *13*	1.68 *7*	α(K)=1.34 *9*; α(L)=0.262 *18*; α(M)=0.061 *5* α(N)=0.0148 *12*; α(O)=0.00240 *15*; α(P)=0.000145 *11* Eγ: weighted average of 145.5 *2* (1981Av04) and 145.27 *15* (1966Em02).
175.3 *2*	47 *9*	435.25	$11/2^+$	259.88	$9/2^+$	M1+E2	0.48 *19*	0.95 *7*	α(K)=0.75 *8*; α(L)=0.150 *8*; α(M)=0.0352 *24* α(N)=0.0085 *6*; α(O)=0.00138 *6*;

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^{183}Re IT decay (1.04 ms) 1981Av04,1966Em02 (continued)

$\gamma(^{183}Re)$ (continued)

E_γ[‡]	I_γ[‡@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	α[†]	Comments
									α(P)=8.1×10^{-5} *10* other Ti(175γ):Ti(321γ)=67:14 (1966Em02).
193.9 *2*	100	1906.9	(25/2)$^+$	1713.0	21/2$^+$	E2		0.355	α(K)=0.184 *3*; α(L)=0.1299 *19*; α(M)=0.0326 *5* α(N)=0.00776 *12*; α(O)=0.001134 *17*; α(P)=1.580×10^{-5} *23* Mult.: α(K)exp=0.20 *7*; K/L reported to be consistent with E2, but actual value not stated (1966Em02).
203.9 *2*	45 *9*	639.2	13/2$^+$	435.25	11/2$^+$	M1+E2	0.14 *7*	0.680 *14*	α(K)=0.562 *13*; α(L)=0.0911 *14*; α(M)=0.0209 *4* α(N)=0.00505 *8*; α(O)=0.000847 *13*; α(P)=6.10×10^{-5} *14* other Ti(204γ):Ti(379γ)=58:21 (1966Em02).
231.6 *2*	39 *8*	870.6	15/2$^+$	639.2	13/2$^+$	(M1+E2)	≤0.14	0.480 *8*	α(K)=0.398 *7*; α(L)=0.0637 *9*; α(M)=0.01455 *21* α(N)=0.00353 *5*; α(O)=0.000592 *9*; α(P)=4.31×10^{-5} *7* other Ti(232γ):Ti(435γ)=46:28 (1966Em02).
257.4 *2*	48 *9*	1127.6	17/2$^+$	870.6	15/2$^+$	M1+E2	≤0.19	0.358 *7*	α(K)=0.296 *6*; α(L)=0.0474 *7*; α(M)=0.01084 *16* α(N)=0.00263 *4*; α(O)=0.000441 *7*; α(P)=3.20×10^{-5} *7* other Ti(257γ):Ti(488γ)=47:42 (1966Em02). I_γ: May include I(259γ)=7; see comment on 260γ from 260 level.
259.9 *2*	7.3	259.88	9/2$^+$	0	5/2$^+$	E2		0.1366	α(K)=0.0845 *12*; α(L)=0.0396 *6*; α(M)=0.00980 *14* α(N)=0.00234 *4*; α(O)=0.000349 *5*; α(P)=7.68×10^{-6} *11* E_γ: from level-energy difference; γ not resolved by 1981Av04 and 1966Em02 do not state Eγ. I_γ: From I(145γ) In 1981Av04 and Ti(145γ):Ti(259γ)=82:6 from 1966Em02.
282.3 *3*	20 *6*	1409.0	19/2$^+$	1127.6	17/2$^+$	M1+E2	<0.59	0.258 *23*	α(K)=0.212 *22*; α(L)=0.0358 *12*; α(M)=0.00825 *21* α(N)=0.00200 *6*; α(O)=0.000332 *13*; α(P)=2.28×10^{-5} *25* other Ti(282γ):Ti(538γ)=22:27 (1966Em02).
304.2 *2*	44 *9*	1713.0	21/2$^+$	1409.0	19/2$^+$	(M1+E2)	0.27 *+8−11*	0.220 *7*	α(K)=0.181 *7*; α(L)=0.0295 *6*;

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^{183}Re IT decay (1.04 ms) 1981Av04,1966Em02 (continued)

$\gamma(^{183}Re)$ (continued)

E_γ[‡]	I_γ[‡@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[†]	Comments
								α(M)=0.00676 *12* α(N)=0.00164 *3*; α(O)=0.000274 *6*; α(P)=1.95×10^{-5} *8* other Ti(304γ):Ti(584γ)=50:68 (1966Em02).
321.1 *3*	12 *3*	435.25	11/2$^+$	114.48	7/2$^+$	(E2)	0.0721	α(K)=0.0487 *7*; α(L)=0.0178 *3*; α(M)=0.00436 *7* α(N)=0.001044 *15*; α(O)=0.0001581 *23*; α(P)=4.59×10^{-6} *7*
379.1 *3*	23 *6*	639.2	13/2$^+$	259.88	9/2$^+$	(E2)	0.0450	α(K)=0.0321 *5*; α(L)=0.00991 *15*; α(M)=0.00240 *4* α(N)=0.000576 *9*; α(O)=8.84×10^{-5} *13*; α(P)=3.09×10^{-6} *5*
435.5 *3*	29 *6*	870.6	15/2$^+$	435.25	11/2$^+$	(E2)	0.0311	α(K)=0.0229 *4*; α(L)=0.00625 *9*; α(M)=0.001503 *22* α(N)=0.000361 *6*; α(O)=5.60×10^{-5} *8*; α(P)=2.24×10^{-6} *4*
487.9 *3*	43 *9*	1127.6	17/2$^+$	639.2	13/2$^+$	E2	0.0232	α(K)=0.01754 *25*; α(L)=0.00437 *7*; α(M)=0.001044 *15* α(N)=0.000251 *4*; α(O)=3.93×10^{-5} *6*; α(P)=1.733×10^{-6} *25*
538.1 *3*	32 *6*	1409.0	19/2$^+$	870.6	15/2$^+$	E2	0.0183	α(K)=0.01403 *20*; α(L)=0.00326 *5*; α(M)=0.000773 *11* α(N)=0.000186 *3*; α(O)=2.94×10^{-5} *5*; α(P)=1.394×10^{-6} *20*
584.9 *3*	80 *15*	1713.0	21/2$^+$	1127.6	17/2$^+$	(E2)	0.01499	α(K)=0.01166 *17*; α(L)=0.00256 *4*; α(M)=0.000605 *9* α(N)=0.0001456 *21*; α(O)=2.32×10^{-5} *4*; α(P)=1.163×10^{-6} *17*

† Additional information 1.
‡ From 1981Av04, except As noted.
# From Adopted Gammas, except As noted.
@ For absolute intensity per 100 decays, multiply by 0.738.

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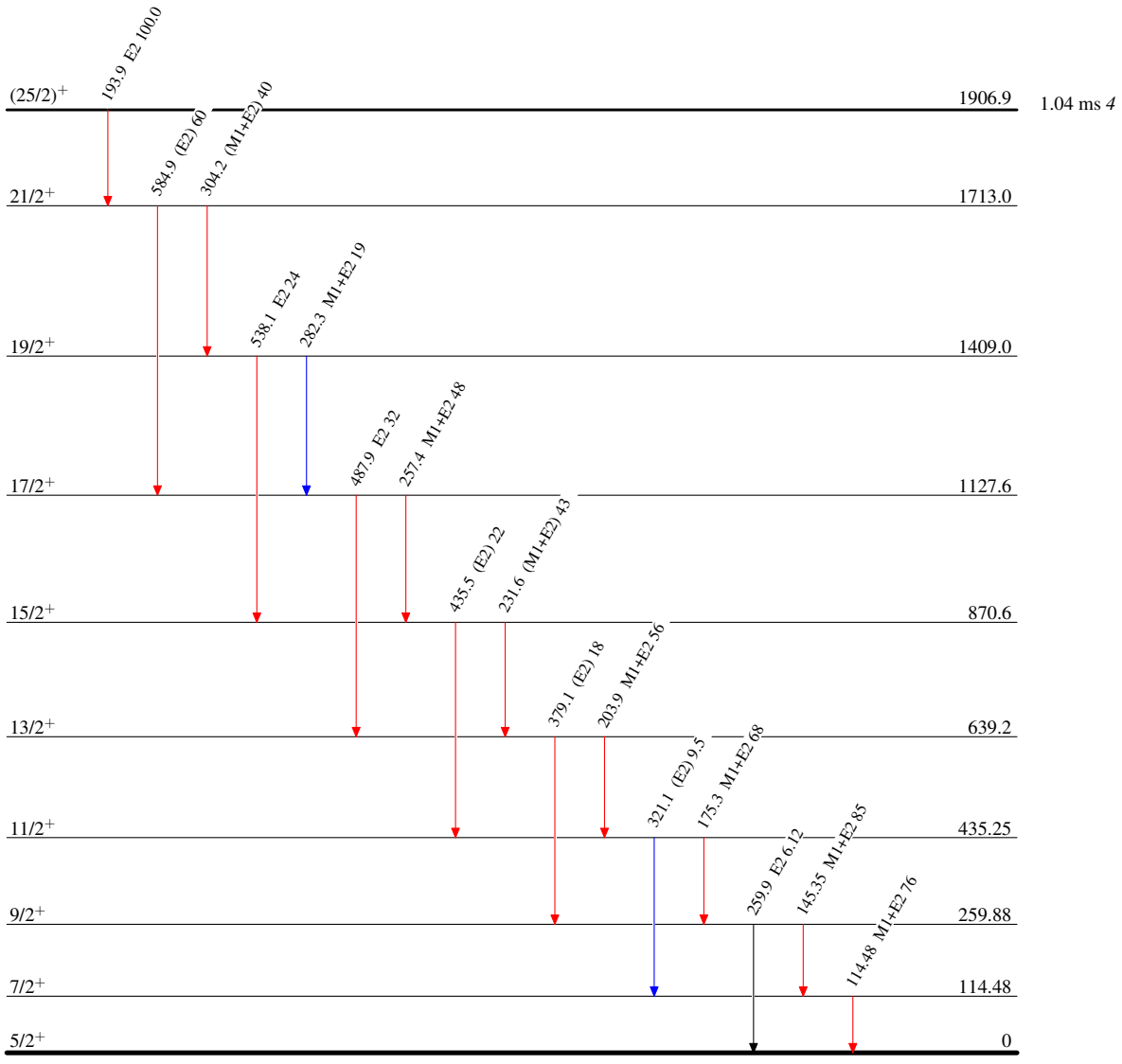
Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
%IT=100.0

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



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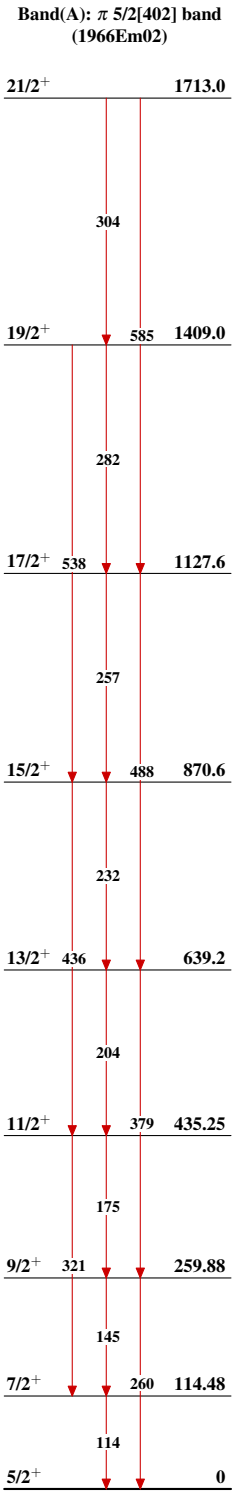

$^{183}_{75}Re_{108}$