^{179}W ε decay (37.05 min) 1969Ko18,1968Ha39,1969Bi10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 110, 265 (2009)	15-Nov-2008

Parent: ^{179}W: E=0.0; $J^\pi=7/2^-$; $T_{1/2}$=37.05 min *16*; Q(ε)=1063 *16*; %ε+%$β^+$ decay=100.0

1969Ko18: Measured Eγ, Iγ, γγ coin, Ice. Detectors: Ge(Li), Si(Li).

1968Ha39: Measured Eγ, Ice. Detector: magnetic spectrograph.

1969Bi10: Measured Eγ, γ(t). Detector: Ge(Li).

^{179}Ta Levels

E(level)	J^π †	$T_{1/2}$	Comments
0.0‡	$7/2^+$	1.82 y *3*	$T_{1/2}$: from Adopted Levels.
30.7# *1*	$9/2^-$	1.42 μs *8*	$T_{1/2}$: from 1964Lo04. Other value: 1.5 μs *2* (1964Pe03).
133.9‡ *2*	$(9/2^+)$		

† From Adopted Levels.
‡ Band(A): 7/2[404] g.s. band.
# Band(B): 9/2[514] band member.

ε,$β^+$ radiations

E(decay)	E(level)	Iε†	Log *ft*	Comments
(929 *16*)	133.9	0.28 *7*	7.04 *11*	εK=0.8107 *4*; εL=0.1443 *3*; εM+=0.04500 *10*
(1032 *16*)	30.7	99.2 *5*	4.583 *15*	εK=0.8128 *3*; εL=0.14279 *22*; εM+=0.04444 *8* I(ε+$β^+$): 99.5% 5 minus feeding to 134 level.
(1063‡ *16*)	0.0	≈1	≈6.6	εK=0.8133 *3*; εL=0.14240 *20*; εM+=0.04430 *8* I(ε+$β^+$): assuming log *ft*=6.6, same as for ^{177}Ta ε decay to ^{177}Hf (which involves the same Nilsson orbitals).

† Absolute intensity per 100 decays.
‡ Existence of this branch is questionable.

γ(^{179}Ta)

Iγ normalization: from decay scheme if Ti(30.7γ+133.9γ)=99.5 *5*% (i.e., allowing 0.5% 5 branch to g.s.).

E_γ	I_γ †‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α#	Comments
30.7 *1*	100	30.7	$9/2^-$	0.0	$7/2^+$	E1	4.6 *9*	α(L)=1.341 *23*; α(M)=0.310 *6*; α(N+..)=0.0805 *14* α(N)=0.0710 *12*; α(O)=0.00923 *15*; α(P)=0.000303 *5* %Iγ=18 *3* assuming recommended normalization. E_γ: mean of 6 determinations by 1963Va28 is 30.69 *4*, but authors do not state systematic uncertainty. Other Eγ: 30.67 (1969Ko18), 30.67 (1968Ha39), 30.5 *5* (1969Bi10). Mult.: from α(L3)exp=0.57 *11*, based on measured α(L3)exp/α(K)exp(E1 100.20γ in ^{176}Ta)=1.9 *4* (1963Va28). This is an anomalous E1 transition, based on ce(L1):ce(L2):ce(L3) exp in 1963Va28 and 1968Ha39. α(E1)=1.73 *3*. α: from α(L3)exp, ce(L1):ce(L2):ce(L3):ce(M1):ce(M2):ce(N)

Continued on next page (footnotes at end of table)

^{179}W ε decay (37.05 min) 1969Ko18,1968Ha39,1969Bi10 (continued)

γ(^{179}Ta) (continued)

E_γ	I_γ[†‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[#]	Comments
								exp= 168:250:100:73:113:40 (1963Va28) and ce(M1):ce(M2):ce(M3):(ce(M4)+ce(M5)) exp=170:235:100:30 (1968Ha39). Other ce(L1):ce(L2):ce(L3) exp=150:220:100 (1968Ha39). From theory, one expects α=1.73.
133.9 *2*	0.59 *6*	133.9	(9/2$^+$)	0.0	7/2$^+$	[M1(+E2)]	1.6 *4*	α(K)=1.0 *6*; α(L)=0.40 *16*; α(M)=0.10 *5*; α(N+..)=0.026 *11* α(N)=0.023 *10*; α(O)=0.0032 *12*; α(P)=9.E−5 *6* E_γ: from 1969Ko18. Other value: 134.0 *10* (1969Bi10).

† From 1969Ko18.
‡ For absolute intensity per 100 decays, multiply by 0.18 *3*.
# Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

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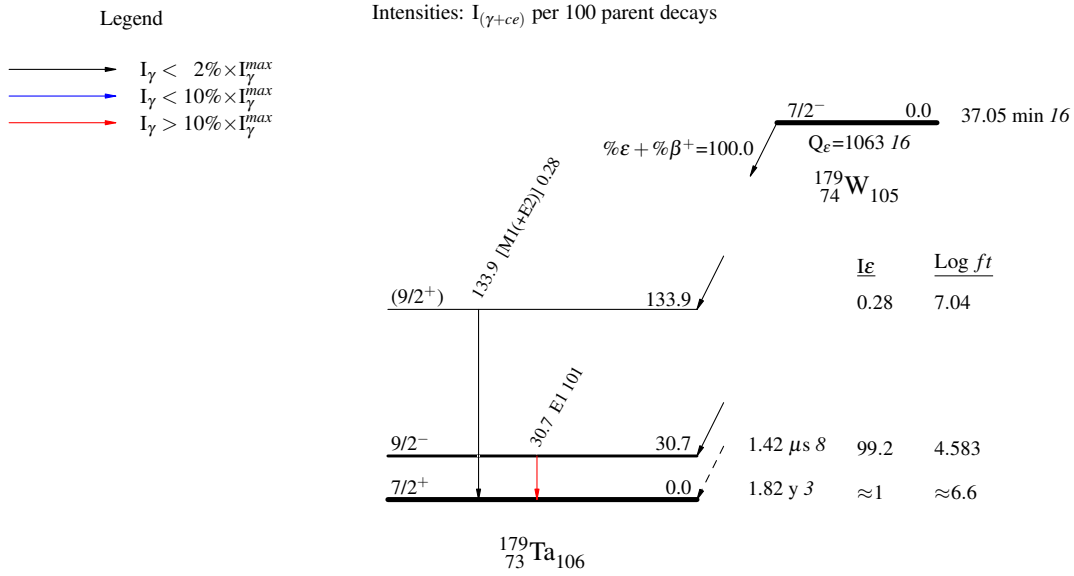
Decay Scheme

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



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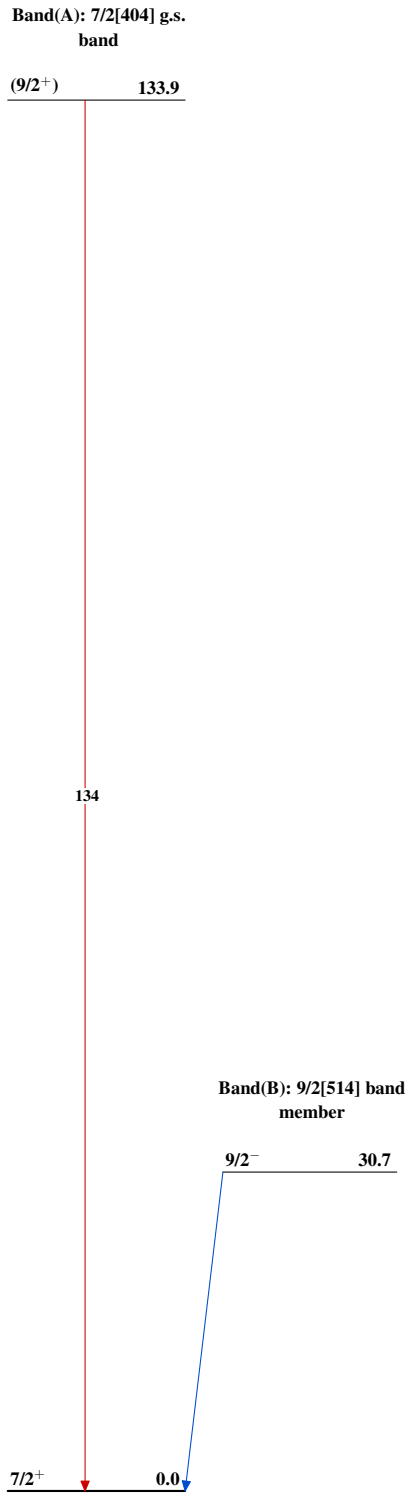

$^{179}_{73}Ta_{106}$