^{179}Tl α decay (1.5 ms) 2002Ro17,1998To14,1996Pa01

Type	Author	History Citation	Literature Cutoff Date
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Parent: ^{179}Tl: E=0.0+x; J^π=(11/2$^-$); $T_{1/2}$=1.5 ms *3*; Q(α)=6718 *8*; %α decay≈100.0

Other: 1983Sc24.

2002Ro17: Target: 90.4% enriched 202Pb; Projectile: ^{78}Kr, E=355 MeV (340 MeV at midtarget); gas-filled separator, parallel-plate avalanche counters, Si strip detector, HPGe detector; deduced $T_{1/2}$, corrected for random correlation rates.

1998To14: Target: ^{90}Zr; Projectile: ^{92}Mo, E=420 MeV (404 MeV at mid-target); fragmented mass analyzer, gas-filled parallel grid avalanche counter, double-sided Si strip detector with 40 horizontal and 40 vertical strips; measured Eα, t, Iα.

1996Pa01: Sources from heavy-ion fusion-evaporation reactions; recoil mass separator, double-sided Si strip detector (FWHM≤20 keV); measured Eα, parent and daughter $T_{1/2}$.

1983Sc24: Target: enriched (>95%) Rb-Mo isotopes; Projectile: ^{92}Mo, E=414-497 MeV; An array of seven position sensitive surface barrier detectors, HPGe detector; measured Eα, Iα. ^{179}Tl assigned from the known α particle emission by the daughter ^{175}Au.

Parent (^{179}Tl) $T_{1/2}$: 1.5 s *3*, weighted average of 1.7 ms *2* (2002Ro17), 1.8 ms *4* from Eα=7213 and 1.6 ms *8* from Eα=7096 (1998To14), 0.7 ms *+6−4* (1996Pa01), and 1.4 ms *5* (1983Sc24).

^{175}Au Levels

E(level)	J^π	Comments
0.0+x	(11/2$^-$)	J^π: From Adopted Levels. E(level): From a suspected doublet of 6438α and 6412α of ^{175}Au α decay (2002Ro17), it seems that 6568α is a g.s. to g.s. transition from ^{179}Tl (0.23 s) to ^{175}Au, and the observed 7069α and 7213α 's are from 0.0+x to 0.0+x state transitions between ^{179}Tl(1.5 ms) and ^{175}Au (1998To14). The 1/2$^+$ g.s. and 11/2$^-$ isomeric state, from systematics and experiment, for these isotopes also looks reasonable for these transitions with low HF values.

α radiations

Eα	E(level)	Iα[‡][#]	HF	Comments
7096 *10*		20 *8*		Eα: Observed only in 1998To14. An expected level of 116 keV above the (11/2$^-$) state at (0.0+x) keV level, calculated from the 7209α and 7096α energy difference, has not been observed in ^{175}Au level scheme (2001Ko44).
7209 *8*	0.0+x	80 *8*	≈1.1[†]	Eα: Weighted average of 7213 *10* (1998To14), 7201 *20* (1996Pa01), and 7200 *20* (1983Sc24).

[†] Using r_0=1.537; average of r_0(^{174}Pt)=1.545 *10*, and r_0(^{176}Hg)=1.53 *4* (1998Ak04).
[‡] Normalized from 1998To14 values.
[#] For absolute intensity per 100 decays, multiply by ≈1.0.