^{175}Au α decay (137 ms)   2017Ba46,2011Wa37,2010An01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin, E. A. Mccutchan	NDS 151, 334 (2018)	30-Jun-2018

Parent: ^{175}Au: E=0.0+x; J^π=(11/2$^-$); $T_{1/2}$=137 ms 1; $Q(\alpha)$=6583 4; %α decay=90 3

^{175}Au-$T_{1/2}$: weighted average of 136 ms 1 (2017Ba46), 139 ms 2 (2011Wa37), and 138 ms 5 (2010An01). Others: 143 ms 8 (2001Ko44), 158 ms 3 (2002Ro17), and 200 ms 22, 185 ms 30 (1996Pa01) (all for 6434α).

^{175}Au-%α decay: From (evaporation residue)-α-α correlation (2010An01). Other: 94 % +6−25 (1983Sc24).

1975Ca06: sources from ^{141}Pr(^{40}Ca,6n) (E(^{40}Ca)=180-290 MeV, helium-jet transport); measured Eα, Iα.

1983Sc24: sources from ^{92}Mo bombardments of isotopically enriched targets of rubidium through molybdenum (velocity-filter, evaporation-residue separation); measured Eα, Iα, $T_{1/2}$ (position-sensitive silicon surface-barrier detectors).

1996Pa01: sources from heavy-ion fusion-evaporation reactions; recoil mass separator, double-sided Si strip detector (FWHM ≤ 20 keV); measured Eα, parent and daughter $T_{1/2}$, %α(^{171}Ir).

2002Ro17: ^{175}Au from (11/2$^-$) ^{179}Tl α decay; ^{179}Tl produced by bombardment of 90.4% enriched ^{102}Pd targets with ^{78}Kr, E=340 MeV (mid-target); gas-filled separator, two parallel-plate avalanche counters (PPACs), Si strip detector in focal plane, TOF measured between PPAC and focal plane detector; two HPGe detectors near focal plane to measure γ and x rays; measured Eα (FWHM=35 keV), parent-daughter (or granddaughter) correlations; deduced $T_{1/2}$, corrected for random correlation rates.

2010An01: ^{175}Au from (11/2$^-$) ^{179}Tl α decay; measured Eγ, Iγ, Eα, Iα, $T_{1/2}$, yield using a single Miniball Ge cluster and a PSSD.

2011Wa37: ^{175}Au from ^{92}Mo(^{86}Sr,p2n) reaction at E=401 MeV; 1 mg/cm^2 Mg degrader foil; plunger device mounted at target position of JUROGAM II.

2017Ba46: ^{175}Au source from ^{179}Tl α decay produced in ^{104}Pd(^{78}Kr,p2n), with E(^{78}Kr)=358 MeV, followed by mass separation using the RITU separator. Measued Eα, Iα, α(t) using two DSSD detectors.

Others: 1975Ca06, 1983Sc24, 2001Ko44.

^{171}Ir Levels

E(level)	J^π	Comments
0.0+x	(11/2$^-$)	J^π: from the Adopted Levels.

α radiations

Eα	E(level)	Iα[‡]	HF[†]	Comments
6434 4	0.0+x	100	≈2	Eα: weighted average of 6433 4 (2017Ba46), 6430 6 (2011Wa37, from 2001Ko44), 6432 5 (2010An01), 6438 9 (1996Pa01), 6440 10 (1983Sc24), 6440 10 (1975Ca06). Were this a g.s. to g.s. transition, Eα would imply $Q(\alpha)$=6585 3, cf. 6583 4 (2017Wa10), so the excitations of the parent and daughter states must Be almost identical.
				Eα: correlated with the 5920α from ^{171}Ir (which feeds the 11/2$^-$ 92 level In ^{167}Re) and with the 7201α from ^{179}Tl (2002Ro17).

[†] r_0=1.56 1 (based on r_0 for ^{170}Os, ^{172}Os, ^{170}Pt, ^{172}Pt obtained from 1998Ak04) and assumption that excitations of parent and daughter states are similar (see comment on 6434α).

[‡] For absolute intensity per 100 decays, multiply by 0.90 3.