^{171}Au α decay (1.04 ms) 1997Da07,2003Bb21,2004Ke06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 191,1 (2023)	22-Aug-2023

Parent: ^{171}Au: E=259 *13*; J^π=11/2$^-$; $T_{1/2}$=1.04 ms *3*; Q(α)=7085 *11*; %α decay=60 *6*

^{171}Au-E,$T_{1/2}$: From ^{171}Au Adopted Levels in the ENSDF database (June 2018 update). No new references after this update.

^{171}Au-J^π: From considerations of $h_{11/2}$ proton-decay mode of ^{171}Au, and comparison of experimental half-life with theoretical half-lives calculated for $s_{1/2}$, $d_{3/2}$ and $h_{11/2}$ proton emission for ^{171}Au (odd-Z, even-N nucleus) using Wentzel-Kramers-Brillouin (WKB) barrier penetration approximation (2004Ke06,1997Da07).

^{171}Au-Q(α): From 2021Wa16.

1997Da07, 1999Po09: ^{171}Au source produced in ^{96}Ru(^{78}Kr,p2n) at E=375-384 MeV, followed by mass separation using fragment mass analyzer (FMA), and detection of recoils, α and protons by position-sensitive parallel plate avalanche counter at focal plane, and a double-sided Si strip detector (DSSSD) at the ATLAS-ANL facility. Measured E(p), Eα, decay curves for protons, production σ, and (recoils)pα correlations.

2003Bb21: ^{171}Au formed in ^{96}Ru(^{78}Kr,X),E=370 MeV, followed by mass separation using RITU separator at the University of Jyvaskyla cyclotron facility. Measured α and protons, half-life of decay of ^{171}Au isomer, (implants)$\alpha\alpha$-correlations.

2004Ke06: measured Eα, E(p), half-life of decay of ^{171}Au isomer decay, (implants)$\alpha\alpha$-correlations at the University of Jyvaskyla cyclotron facility.

^{167}Ir Levels

E(level)	J^π	$T_{1/2}$	Comments
175.3 *22*	11/2$^-$	28.6 ms *9*	E(level),J^π,$T_{1/2}$: from the Adopted Levels.

α radiations

Eα	E(level)	Iα[‡]	HF[†]	Comments
6995 *4*	175.3	100	1.55 *18*	Eα: weighted average of 6995 *4* (2004Ke06) and 6996 *6* (1997Da07, 1999Po09).

[†] The nuclear radius parameter r_0(^{167}Ir)=1.5602 *24* is deduced from interpolation (or unweighted average) of radius parameters of the adjacent even-even nuclides (2020Si16).

[‡] For absolute intensity per 100 decays, multiply by 0.60 *6*.