

^{197}Au IT decay (7.73 s)

| Type | Author | History | Citation | Literature Cutoff Date |
|-----------------|------------------------------|---------|---------------------|------------------------|
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Parent: ^{197}Au : $E=409.15$ 8; $J^\pi=11/2^-$; $T_{1/2}=7.73$ s 6; %IT decay=100.0

Sources produced by daughter ^{197}Pt (94.4 min) ([1965Ha15](#)), daughter ^{197}Hg (23.8 h) ([1965Ha15](#)), $^{197}\text{Au}(n,n')$ ([1947Fr04](#),[1966Sm01](#),[1968Bo52](#)), $^{197}\text{Au}(\gamma,\gamma')$ ([1973Fo15](#)) and $^{198}\text{Pt}(\alpha,5n)$ ([1984Ha12](#)).

^{197}Au IT decay corresponds to 23.8-h ^{197}Hg ε decay directly to 7.8-s isomeric state.

 ^{197}Au Levels

| E(level) [†] | J^π [‡] | $T_{1/2}$ [‡] | Comments |
|-----------------------|----------------------|------------------------|---|
| 0.0 | 3/2 ⁺ | stable | |
| 77.3510 20 | 1/2 ⁺ | 1.91 ns 1 | |
| 279.00 5 | 5/2 ⁺ | 18.6 ps 15 | (ce 130 γ)(279 γ)-coin (1955Jo22). |
| 409.15 8 | 11/2 ⁻ | 7.73 s 6 | %IT=100 (130 γ)(279 γ)(θ): $A_2=-0.299$ 12, $A_4\approx 0$ (1956Ka09). $g=(+)$ 1.087 16 (1984Ha12), 1.17 7 (1983Li21). |

[†] From decay scheme and E_γ 's by using least-squares fit to data.

[‡] From Adopted Levels.

¹⁹⁷Au IT decay (7.73 s) (continued)

$\gamma(^{197}\text{Au})$

I_γ normalization: From sum I(γ+ce)(g.s.)=100.
I_γ-Branching ratio data are from 23.8-h ¹⁹⁷Hg ε decay.

| E_γ [‡] | I _γ ^{†#} | E _i (level) | J _i ^π | E _f | J _f ^π | Mult. [‡] | δ [‡] | α [@] | I _(γ+ce) [#] | Comments |
|-------------------------|------------------------------|------------------------|-----------------------------|----------------|-----------------------------|--------------------|----------------|----------------|----------------------------------|---|
| (77.351 2) | 0.42 8 | 77.3510 | 1/2 ⁺ | 0.0 | 3/2 ⁺ | M1+E2 | -0.35 1 | 4.24 7 | 2.2 4 | α(L)= 3.21 6; α(M)= 0.780 14; α(N+..)= 0.244 5 I _γ : from I(γ+ce) and α. I _(γ+ce) : from intensity balance at the 77 level. α(K)= 1.027; α(L)= 21.48; α(M)= 5.89; α(N+..)= 1.886 Mult.: from α(K)exp=0.9 3, α(exp)=28 4 (1966Sm01); α(exp)=29.4 50 (1983La26). α(K)= 0.1674; α(L)= 0.1500; α(M)= 0.0384; α(N+..)=0.01194 |
| 130.2 1 | 4.4 3 | 409.15 | 11/2 ⁻ | 279.00 | 5/2 ⁺ | E3 | | 30.3 | | α(K)= 0.308 7; α(L)= 0.0548 4; α(M)=0.01279 8; α(N+..)=0.00400 |
| 201.6 3 | 1.6 3 | 279.00 | 5/2 ⁺ | 77.3510 | 1/2 ⁺ | E2 | | 0.368 | | δ: from γ(θ) (1971Mc14), Coul. ex. other: -0.34 4 from (130γ)(279γ)(θ): A ₂ =-0.299 12 (1956Ka09). α(K)exp=0.32 4, α(exp)=0.44 10 (1966Sm01). |
| 279.01 5 | 100 | 279.00 | 5/2 ⁺ | 0.0 | 3/2 ⁺ | M1+E2 | -0.40 4 | 0.380 7 | | α(K)= 2.413; α(L)= 1.154; α(M)= 0.306; α(N+..)= 0.0982 I _γ : from I _γ /I _γ (130γ)=0.034 12 in ¹⁹⁷ Hg ε decay (23.8 h). Other: <0.2 (1966Sm01). |
| (409.1 1) | 0.15 6 | 409.15 | 11/2 ⁻ | 0.0 | 3/2 ⁺ | (M4) | | 3.97 | | |

[†] From 1966Sm01, except as noted.

[‡] From adopted γ radiations.

[#] For absolute intensity per 100 decays, multiply by 0.709 5.

[@] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multiplicities, and mixing ratios, unless otherwise specified.

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Decay Scheme

Intensities: Relative $I_{(\gamma+ce)}$
 %IT=100.0

Legend

- ▶ $I_\gamma < 2\% \times I_\gamma^{max}$
- ▶ $I_\gamma < 10\% \times I_\gamma^{max}$
- ▶ $I_\gamma > 10\% \times I_\gamma^{max}$
- - - -▶ γ Decay (Uncertain)
- Coincidence

