
 ^{185}W IT decay (1.67 min) [1970Gu02](#),[1970Ma60](#),[1969Ku07](#)

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	S. -c. Wu	NDS 106, 619 (2005)	1-Nov-2005

Parent: ^{185}W : E=197.43 5; $J^\pi=11/2^+$; $T_{1/2}=1.67$ min 3; %IT decay=100.0

[1970Gu02](#): Radioactivity $^{185\text{m}}\text{W}$ produced by $\text{W}(n,\gamma)$; Ge(Li) and NaI(Tl) detectors; measured E_γ , I_γ , $\gamma\gamma$ -coin, $X\gamma$ -coin.

[1970Ma60](#): Radioactivity $^{185\text{m}}\text{W}$ produced by $^{184}\text{W}(n,\gamma)$; Ge(Li) detectors; measured E_γ , I_γ , $I(\text{ce})$.

[1969Ku07](#): Radioactivity of $^{185\text{m}}\text{W}$ produced by $^{186}\text{W}(\gamma,n)$; Ge(Li) and Si(Li) detectors; measured E_γ , I_γ , $I(\text{ce})$, ICC.

[1969Da01](#): Radioactivity of $^{185\text{m}}\text{W}$ produced by $^{184}\text{W}(n,\gamma)$; Ge(Li) detector; measured E_γ , I_γ , ICC, $T_{1/2}$.

Others: [1955Po26](#), [1960Mo04](#), [1966Kr03](#), [1967Ch37](#).

 ^{185}W Levels

E(level) [†]	J^π [‡]	$T_{1/2}$	Comments
0.0	$3/2^-$	75.1 d 3	$T_{1/2}$: from Adopted Levels.
23.56 4	$1/2^-$		
65.88 4	$5/2^-$		
93.31 6	$3/2^-$		
173.74 5	$7/2^-$		
187.90 3	$5/2^-$		
197.43 5	$11/2^+$	1.67 min 3	$T_{1/2}$: see Adopted Levels for half-life measurements.

[†] From a least-squares fit to γ -ray energies.

[‡] From Adopted Levels.

$\gamma(^{185}\text{W})$

I_γ normalization: from decay scheme if ΣI(γ+ce) (γ rays populating or passing through the 93 level)=100%.

x-ray intensities relative to 100 for 131_γ

x-ray	Intensity	Reference
L x ray	285 50	1970Gu02
Kα x ray	150 14	1969Da01
Kα x ray	131 7	1970Gu02
K x ray	≈ 310*	1970Ma60
Kα x ray	140 28	1970Pa32

*This value seems 50% too large compared with other data.

E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	δ	$\alpha^@$	$I_{(\gamma+ce)}^\#$	Comments
(9.53)		197.43	11/2 ⁺	187.90	5/2 ⁻	[E3]		4.0×10 ⁷	75 5	$\alpha(M)=3.04\times 10^7$ I _(γ+ce) : from intensity balance at 187.9 level.
23.54 & 5	3.9 & 6	23.56	1/2 ⁻	0.0	3/2 ⁻	(M1+E2)	0.10 3	93 23		$\alpha(L)=71\ 13$; $\alpha(M)=17\ 3$ I _γ : from 1970Gu02. Other value: 2.2 6 (1969Ku07). I _γ : γ ray placed twice in level scheme. I _γ for component from 197.4 level is negligible. Mult.,δ: from $\alpha(\text{exp})=92\ 20$, deduced from intensity balance at 23.5 level and I _γ =3.9 6.
23.54 & 5	0.018 & 6	197.43	11/2 ⁺	173.74	7/2 ⁻	[M2]		8.7×10 ³	155 5	$\alpha(L)=6.44\times 10^3$; $\alpha(M)=1692$ I _(γ+ce) : from intensity balance at 173.6 level. I _γ : from I(γ+ce)=155 5 and $\alpha(M2)=8700$. $\alpha(L)=145$; $\alpha(M)=36.3$ Mult.: From $\alpha_{\text{tot}}(\text{exp})=171$ (1969Da01).
42.29 5	1.7 5	65.88	5/2 ⁻	23.56	1/2 ⁻	E2		194		$\alpha(L)=10.2\ 13$; $\alpha(M)=2.5\ 3$; $\alpha(N+..)=0.73\ 12$ Mult.,δ: from $\alpha(L)\text{exp}=10.3\ 16$ (weighted average of 10 2 and 11.0 28, from ¹⁸⁵ Ta β ⁻ decay (1969Ku07)). $\alpha(M)\text{exp}=3.5\ 15$ (1969Ku07).
65.86 3	134 7	65.88	5/2 ⁻	0.0	3/2 ⁻	M1+E2	1.1 3	13.0 26		I _(γ+ce) : transition was not observed. I(γ+ce) was calculated from intensity balance at 93.3 level. E _γ : reported only by 1970Gu02.
69.7 3		93.31	3/2 ⁻	23.56	1/2 ⁻				11.5 21	$\alpha(K)=2.9\ 19$; $\alpha(L)=1.9\ 10$; $\alpha(M)=0.5\ 3$; $\alpha(N+..)=0.14\ 8$
93.30 5	0.62 21	93.31	3/2 ⁻	0.0	3/2 ⁻	[M1,E2]		5.6 4		
94.59 4	2.43 17	187.90	5/2 ⁻	93.31	3/2 ⁻	[M1,E2]		5.4 4		

¹⁸⁵W IT decay (1.67 min) [1970Gu02](#),[1970Ma60](#),[1969Ku07](#) (continued)

$\gamma(^{185}\text{W})$ (continued)

E_γ [‡]	I_γ ^{†#}	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	δ	α [@]	Comments
107.85 2	9.4 7	173.74	7/2 ⁻	65.88	5/2 ⁻	M1+E2	1.2 +6-3	3.34 16	$\alpha(\text{K})= 1.80\ 25; \alpha(\text{L})= 1.18\ 12; \alpha(\text{M})= 0.29\ 3; \alpha(\text{N}+..)= 0.086\ 9$ Mult., δ : from ¹⁸⁵ Ta β^- decay.
122.05 7	2.35 17	187.90	5/2 ⁻	65.88	5/2 ⁻	[M1,E2]		2.3 5	$\alpha(\text{K})= 1.4\ 9; \alpha(\text{L})= 0.6\ 3; \alpha(\text{M})= 0.16\ 8; \alpha(\text{N}+..)= 0.047\ 22$
131.55 2	100 3	197.43	11/2 ⁺	65.88	5/2 ⁻	E3		19.8	$\alpha(\text{K})= 1.41; \alpha(\text{L})= 13.6; \alpha(\text{M})= 3.62; \alpha(\text{N}+..)= 1.08$ Mult.: from $\alpha(\text{K})\text{exp}=1.3\ 7$, $\alpha(\text{L})\text{exp}=13\ 2$, and $\alpha(\text{M})\text{exp}=4.4\ 10$ (1969Ku07).
164.33 2	13.6 6	187.90	5/2 ⁻	23.56	1/2 ⁻	[E2]		0.614	$\alpha(\text{K})= 0.287; \alpha(\text{L})= 0.247; \alpha(\text{M})= 0.0617; \alpha(\text{N}+..)= 0.0180$
173.68 2	75.4 21	173.74	7/2 ⁻	0.0	3/2 ⁻	E2		0.506	$\alpha(\text{K})= 0.248; \alpha(\text{L})= 0.195; \alpha(\text{M})= 0.0485; \alpha(\text{N}+..)= 0.0142$ Mult.: from $\alpha(\text{K})\text{exp}=0.27\ 15$ and $\alpha(\text{L})\text{exp}=0.23\ 10$ (1969Ku07).
187.88 2	18.8 8	187.90	5/2 ⁻	0.0	3/2 ⁻	[M1,E2]		0.60 22	$\alpha(\text{K})= 0.44\ 24; \alpha(\text{L})= 0.12\ 5; \alpha(\text{M})= 0.029\ 13; \alpha(\text{N}+..)= 0.0087\ 14$

[†] Weighted average, with χ^2 minimization, from [1970Gu02](#), [1969Ku07](#), [1970Ma60](#), [1970Pa32](#), and [1969Da01](#). 12% uncertainty assigned by evaluator to $I_\gamma(65.9\gamma)$ from [1969Da01](#), [1970Gu02](#), and [1970Pa32](#); 7% to $I_\gamma(131.6\gamma)$ from [1969Ku07](#) and [1970Ma60](#), for calculating weighted averages.

[‡] From [1970Gu02](#).

[#] For absolute intensity per 100 decays, multiply by 0.0433 16.

[@] 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.

[&] Multiply placed with intensity suitably divided.

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Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
@ Multiply placed: intensity suitably divided
%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)

