

$^{170}\text{W}$   $\varepsilon$  decay [1990Me12,1997MeZZ](#)

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	C. M. Baglin <sup>1</sup> , E. A. Mccutchan <sup>2</sup> , S. Basunia <sup>1</sup>		NDS 153, 1 (2018)	1-Oct-2018

Parent:  $^{170}\text{W}$ : E=0.0;  $J^\pi=0^+$ ;  $T_{1/2}=2.42$  min 4;  $Q(\varepsilon)=2847$  3I; % $\varepsilon$ +% $\beta^+$  decay=100.0

[1990Me12](#): measured  $E_\gamma$ ,  $\gamma$ -K x ray(Ta) coin,  $\gamma\gamma$  coin,  $\gamma(t)$ ,  $\gamma$  excit.

[1997MeZZ](#): revised assignment of four unplaced lines attributed to  $^{170}\text{W}$   $\varepsilon$  decay in [1990Me12](#).

Other: [1987Es08](#).

 $^{170}\text{Ta}$  Levels

E(level)	$J^\pi$ <sup>†‡</sup>
0.0	(3 <sup>+</sup> )
316.2	(1 <sup>+</sup> )

<sup>†</sup> From Adopted Levels.

<sup>‡</sup> See comment on  $J^\pi(316$  level) in Adopted Levels.

 $\gamma(^{170}\text{Ta})$ 

Lines with  $E_\gamma=59.6$ , 61.3, 117.6, 144.0, thought by [1990Me12](#) to arise from  $^{170}\text{W}$   $\varepsilon$  decay, have the appropriate energy and  $T_{1/2}$  to be associated with  $^{181}\text{Os}$   $\varepsilon$  decay, and [1997MeZZ](#) have reassigned them to the latter decay. The first two are now believed to be the  $K\alpha$  x ray lines of Re and the other two are transitions from the first two excited states of  $^{181}\text{Re}$ . They may arise from beam interactions with Ta in beam-line components during source production using the  $^{138}\text{Ba}(^{36}\text{Ar},x\text{n}\gamma)$  reaction.

$E_\gamma$ <sup>†</sup>	$I_\gamma$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult.	$\alpha^\#$	Comments
316.2 <sup>‡</sup>	100.0	316.2	(1 <sup>+</sup> )	0.0	(3 <sup>+</sup> )	[E2]	0.0702	$\alpha(\text{K})=0.0487$ 7; $\alpha(\text{L})=0.01644$ 23; $\alpha(\text{M})=0.00398$ 6; $\alpha(\text{N+..})=0.001073$ 15 $\alpha(\text{N})=0.000937$ 14; $\alpha(\text{O})=0.0001326$ 19; $\alpha(\text{P})=3.88\times 10^{-6}$ 6 Other $E_\gamma$ : 316.4 ( <a href="#">1987Es08</a> ).

<sup>†</sup> Uncertainty not stated by authors; however,  $\Delta E \leq 0.4$  keV for transitions of similar energy in other isotopes observed in same study.  $\Delta E=0.4$  is, therefore, assigned by the evaluator in Adopted Gammas to  $E_\gamma$  adopted from this data set.

<sup>‡</sup> Coincident with Ta K x ray.

<sup>#</sup> Total theoretical internal conversion coefficients, calculated using the BrIcc code ([2008Ki07](#)) with Frozen orbital approximation based on  $\gamma$ -ray energies, assigned multiplicities, and mixing ratios, unless otherwise specified.

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## Decay Scheme

Intensities: Relative  $I_\gamma$ 