

¹⁸⁰Hf(²³⁸U,X γ) 2000Wh04

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	E. A. Mccutchan	NDS 126, 151 (2015)	1-Feb-2015

E(²³⁸U)=1.6 GeV, beam chopped at 8.25/16.5 μ s and 2/4 ms on/off cycles. Measured E γ , I γ , $\gamma\gamma$, γ -x-ray and γ -t coincidences using Gammasphere array consisting of 98 HPGe and 3 x-ray detectors, all with Compton-suppression.

¹⁸⁰Ta Levels

E(level) [†]	J π [‡]	T _{1/2}	Comments
77.1	9 ⁻		
280.0	10 ⁻		
505.4	11 ⁻		
752.3	12 ⁻		
1020.9	13 ⁻		
1309.7	14 ⁻		
1452.5	15 ⁻		
1792.4	16 ⁻		
2157.8	17 ⁻		
2589.2	18 ⁽⁺⁾		
2901.0	19 ⁻		
3310.5	20 ⁻		
3680.3 [#]	(22 ⁻)	2.0 μ s 5	T _{1/2} : from comparison of 492 γ and 370 γ intensities in 365 γ gated spectrum. J π : (E2) 370 γ to 20 ⁻ . configuration= ν 7/2[503] ν 7/2[514] ν 9/2[624] π 5/2[402] π 7/2[404] π 9/2[514].
4172.3			
4172.3+x [#]	(23,24,25)	17 μ s 5	T _{1/2} : from $\gamma\gamma$ (t). J π : 492 γ or 492 γ -x γ cascade to (22 ⁻). E(level): possibly same level as 4172.3-keV level. J π : proposed configuration of ν 7/2[514] ν 9/2[624] ν 11/2[615] π 5/2[402] π 7/2[404] π 9/2[514] would suggest J π =24 ⁺ .

[†] From least-squares fit to E γ by the evaluator. The energy of the 77.1-keV isomeric level is taken from the Adopted Levels.

[‡] From the Adopted Levels, except where noted.

[#] Proposed as the six quasiparticle isomers predicted in 1998Dr07 and 1999Sa59.

γ (¹⁸⁰Ta)

E γ	E _i (level)	J π _i	E _f	J π _f	Mult.	Comments
x	4172.3+x	(23,24,25)	4172.3			E γ : x<60.
143.0	1452.5	15 ⁻	1309.7	14 ⁻		
202.7	280.0	10 ⁻	77.1	9 ⁻		
225.1	505.4	11 ⁻	280.0	10 ⁻		
246.9	752.3	12 ⁻	505.4	11 ⁻		
268.3	1020.9	13 ⁻	752.3	12 ⁻		
288.8	1309.7	14 ⁻	1020.9	13 ⁻		
311.8	2901.0	19 ⁻	2589.2	18 ⁽⁺⁾		
339.8	1792.4	16 ⁻	1452.5	15 ⁻		
365.2	2157.8	17 ⁻	1792.4	16 ⁻		
369.8	3680.3	(22 ⁻)	3310.5	20 ⁻	(E2)	α (exp)=0.09 8 from intensity balance. Mult.: E2 or E3 from α (exp); E3 excluded by comparison to RUL.
409.5	3310.5	20 ⁻	2901.0	19 ⁻		
428.5	505.4	11 ⁻	77.1	9 ⁻		
431.3	2589.2	18 ⁽⁺⁾	2157.8	17 ⁻		

Continued on next page (footnotes at end of table)

$^{180}\text{Hf}(^{238}\text{U},\text{X}\gamma)$ 2000Wh04 (continued) $\gamma(^{180}\text{Ta})$ (continued)

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	Comments
431.5	1452.5	15 ⁻	1020.9	13 ⁻		
472.3	752.3	12 ⁻	280.0	10 ⁻		
492.0	4172.3		3680.3	(22 ⁻)		
515.5	1020.9	13 ⁻	505.4	11 ⁻		
557.6	1309.7	14 ⁻	752.3	12 ⁻		
705	2157.8	17 ⁻	1452.5	15 ⁻		
1136.8	2589.2	18 ⁽⁺⁾	1452.5	15 ⁻	[E3]	$I_\gamma: I_\gamma(1137\gamma)/I_\gamma(431\gamma)\approx 7\%$.

$^{180}\text{Hf}(^{238}\text{U}, X, \gamma)$ 2000Wh04

Level Scheme

