Coulomb excitation **1959De29,1961Ha21,2007Ha05**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 159, 1 (2019)	30-Aug-2019

1959De29: E=6.0-6.5 MeV, measured Eγ, Iγ, x-γ coin, $\gamma\gamma$ coin; scin.
1961Ha21: ^{177}Hf(d,d′) E=4.5 MeV, measured scattered deuterons; magnetic spectrograph.
2007Ha05: (^{136}Xe,^{136}Xe′γ) E=650 MeV. Measured Eγ, Iγ, $\gamma\gamma$ using Gammasphere array with 100 HPGe and 20 isobutane-filled PPACs (CHICO array).
Other: 1996Lu07.

^{177}Hf Levels

E(level)†	J$^\pi$‡	$T_{1/2}$‡	Comments
0.0	7/2$^-$	stable	
112.9498 *4*	9/2$^-$	0.541 ns *14*	$T_{1/2}$: Other: 0.59 *3* from B(E2)↑=1.92 *10* (1961Ha21) and δ=−4.77 *19*.
249.6744 *5*	11/2$^-$	107 ps *11*	$T_{1/2}$: From B(E2)↑=0.50 *5* (1961Ha21) and the adopted branching ratios. Others: 112 ps, from B(E2)↑=0.48 (1956He78) and 61 ps *24*, from B(E2)↑=0.88 *34* (1959De29).
409.0# *7*	13/2$^-$		
591.3# *8*	15/2$^-$		
794.2# *9*	17/2$^-$		
1018.1# *10*	19/2$^-$		
1260.4# *11*	21/2$^-$		
1520.7# *12*	23/2$^-$		
1798.5# *13*	25/2$^-$		
2091.7# *16*	27/2$^-$		
2399.5# *17*	29/2$^-$		
2720.7# *19*	31/2$^-$		
3054.5# *19*	33/2$^-$		
3399.7# *21*	35/2$^-$		
3754.5# *22*	37/2$^-$		
4122.9?# *25*	39/2$^-$		

† From a least-squares fit to Eγ. ΔEγ were assumed by by the evaluator, unless otherwise stated.
‡ From Adopted Levels, unless otherwise stated.
# Band(A): K^π=7/2$^-$: ν7/2[514] band.

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$\gamma(^{177}Hf)$

E_i(level)	J_i^π	E_γ †	I_γ	E_f	J_f^π	Mult.	δ	α #	Comments
112.9498	9/2$^-$	112.9498‡ *4*	100‡	0.0	7/2$^-$	M1+E2‡	−4.77‡ *19*	2.23 *3*	
249.6744	11/2$^-$	136.7245‡ *5*	23.27‡ *19*	112.9498	9/2$^-$	M1+E2‡	−3.31‡ *15*	1.130 *17*	
		249.6742 *6*	100.0 *5*	0.0	7/2$^-$	E2		0.1395 *20*	E_γ,I_γ,Mult.: From adopted gammas.
409.0	13/2$^-$	159 *1*		249.6744	11/2$^-$				
		296 *1*		112.9498	9/2$^-$				
591.3	15/2$^-$	182 *1*		409.0	13/2$^-$				
		342 *1*		249.6744	11/2$^-$				
794.2	17/2$^-$	203 *1*		591.3	15/2$^-$				
		385 *1*		409.0	13/2$^-$				
1018.1	19/2$^-$	224 *1*		794.2	17/2$^-$				
		427 *1*		591.3	15/2$^-$				
1260.4	21/2$^-$	242 *1*		1018.1	19/2$^-$				
		466 *1*		794.2	17/2$^-$				
1520.7	23/2$^-$	260 *1*		1260.4	21/2$^-$				
		503 *1*		1018.1	19/2$^-$				
1798.5	25/2$^-$	278 *1*		1520.7	23/2$^-$				
		538 *1*		1260.4	21/2$^-$				
2091.7	27/2$^-$	571 *1*		1520.7	23/2$^-$				
2399.5	29/2$^-$	601 *1*		1798.5	25/2$^-$				
2720.7	31/2$^-$	629 *1*		2091.7	27/2$^-$				
3054.5	33/2$^-$	655 *1*		2399.5	29/2$^-$				
3399.7	35/2$^-$	679 *1*		2720.7	31/2$^-$				
3754.5	37/2$^-$	700 *1*		3054.5	33/2$^-$				
4122.9?	39/2$^-$	723@ *1*		3399.7	35/2$^-$				

† From 2007Ha05, unless otherwise stated.
‡ From adopted gammas.
# 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.
@ Placement of transition in the level scheme is uncertain.

From ENSDF

$^{177}_{72}Hf_{105}$-2

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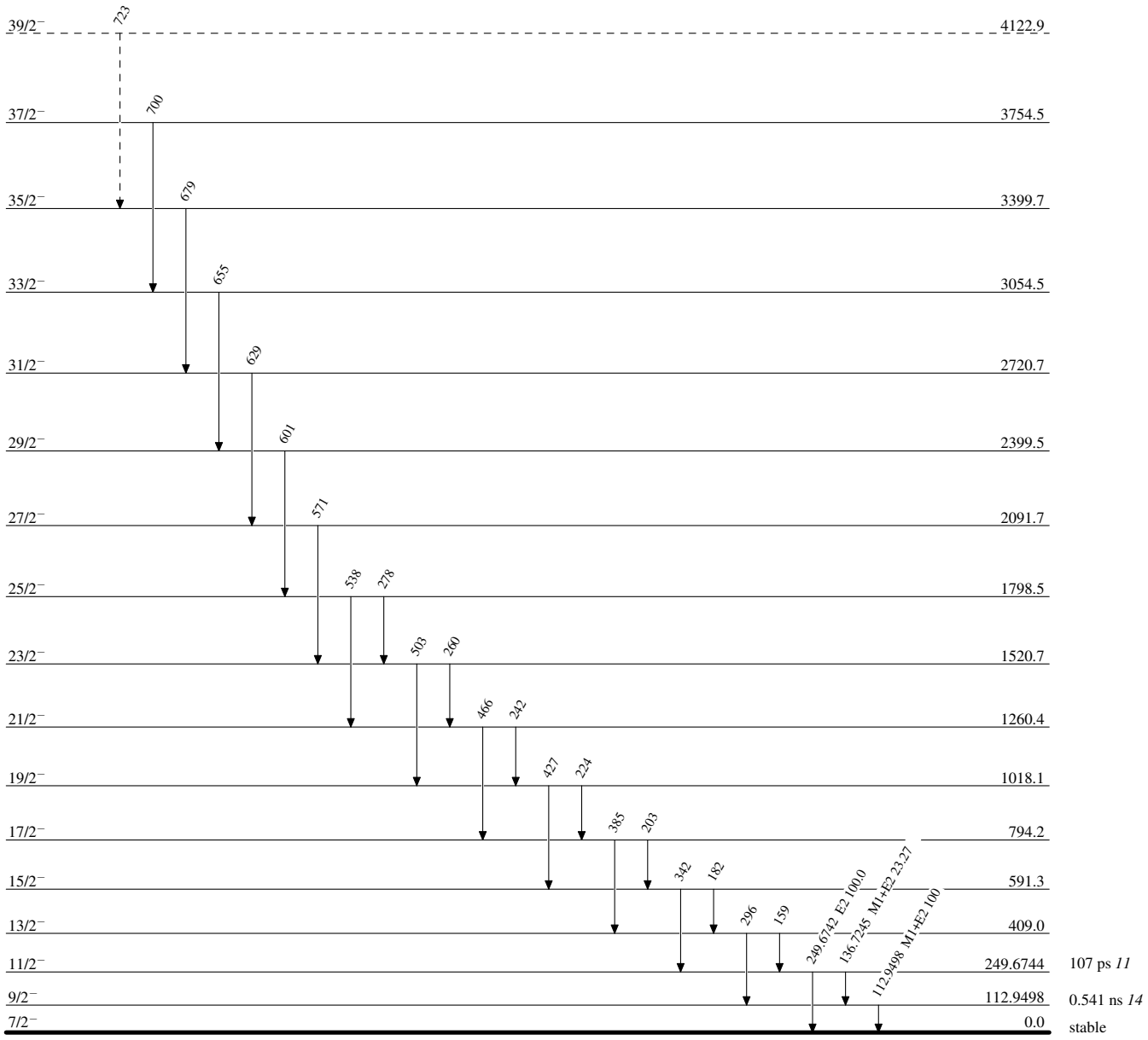
Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{177}_{72}Hf_{105}$

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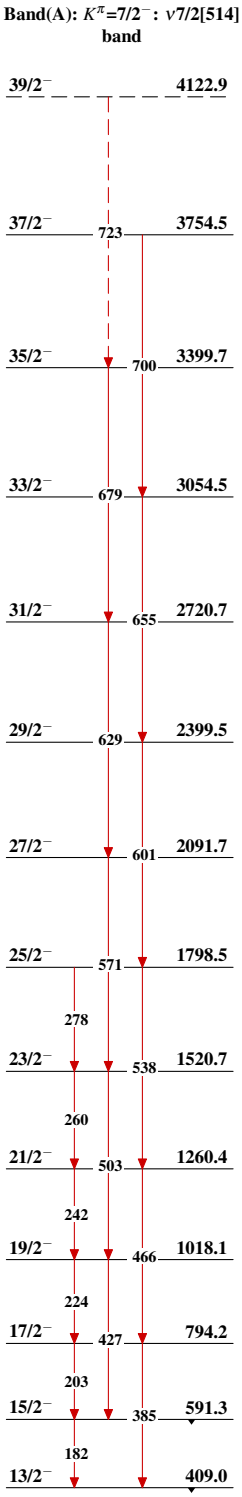

$^{177}_{72}Hf_{105}$