

$^{176}\text{Lu}(\text{p},\text{n}\gamma)$  1967Bo08

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 107, 791 (2006)	15-Sep-2005

Target: 70% enriched  $^{176}\text{Lu}$ . Projectile: protons, E=10 MeV. Measured  $E\gamma$ ,  $I\gamma$ , Ice,  $\gamma\gamma$  coin,  $\gamma$  ce coin,  $\gamma(t)$ , Ce(t).  
Detectors:Ge(Li), scin, magnetic spectrometer.

 $^{176}\text{Hf}$  Levels

E(level) <sup>†</sup>	J <sup>π</sup> <sup>‡</sup>	T <sub>1/2</sub>	Comments
0.0	0 <sup>+</sup>		
88.0 10	2 <sup>+</sup>		
290.0 15	4 <sup>+</sup>		
597.3 17	6 <sup>+</sup>		
1334.7 17	6 <sup>+</sup>	13.0 μs 5	T <sub>1/2</sub> : determined from ce(K)(202γ)(t). Value is high (compared to values in (α,2nγ) and (γ,n)) probably because of the population of this level from the 1562 (T <sub>1/2</sub> =10.3 μs) level.
1507.7 19	(7 <sup>+</sup> )		
1561.7 19	8 <sup>-</sup>	10.3 μs 5	T <sub>1/2</sub> : determined from ce(K)(227γ)(t).

<sup>†</sup> From a least squares fit to the  $\gamma$ -ray energies assuming  $\Delta E=1$  keV for all  $\gamma$ -rays.

<sup>‡</sup> From Adopted Levels.

 $\gamma(^{176}\text{Hf})$ 

$\alpha'$ s were deduced from measured  $I\gamma$  and Ice, using theoretical values for 202 $\gamma$  and 307 $\gamma$  for normalizing relative photon and electron intensities.

$E_\gamma$	$I_\gamma$	$E_i(\text{level})$	J <sup>π</sup> <sub>i</sub>	$E_f$	J <sup>π</sup> <sub>f</sub>	Mult.	Comments
54		1561.7	8 <sup>-</sup>	1507.7	(7 <sup>+</sup> )		$E_\gamma$ : observed only in a coincidence measurement.
88	205 20	88.0	2 <sup>+</sup>	0.0	0 <sup>+</sup>	E2 <sup>†</sup>	Mult.: from $\alpha(\text{L})\text{exp}=2.9$ 6.
173	192 20	1507.7	(7 <sup>+</sup> )	1334.7	6 <sup>+</sup>	M1+E2	Mult.: from $\alpha(\text{K})\text{exp}=0.54$ 8, ce(K)/ce(L) exp=5 2.
202	1000	290.0	4 <sup>+</sup>	88.0	2 <sup>+</sup>	E2	Mult.: from adopted gammas.
227	75 8	1561.7	8 <sup>-</sup>	1334.7	6 <sup>+</sup>	M2	Mult.: from $\alpha(\text{K})\text{exp}=1.2$ 2, ce(K)/ce(L) exp=4.5 6.
307	790 80	597.3	6 <sup>+</sup>	290.0	4 <sup>+</sup>	E2 <sup>†</sup>	Mult.: from $\alpha(\text{K})\text{exp}=0.068$ 10, ce(K)/ce(L) exp=3.2 4.
737	790 80	1334.7	6 <sup>+</sup>	597.3	6 <sup>+</sup>	E2 <sup>‡</sup>	Mult.: from $\alpha(\text{K})\text{exp}=0.0059$ 9, ce(K)/ce(L) exp=4.5 6.
1045	440 45	1334.7	6 <sup>+</sup>	290.0	4 <sup>+</sup>	E2 <sup>‡</sup>	Mult.: from $\alpha(\text{K})\text{exp}=0.0035$ 5.

<sup>†</sup>  $I\gamma$  and Ice were normalized using  $\alpha(\text{K})(202\gamma, \text{E}2)=0.165$  (theory).

<sup>‡</sup>  $I\gamma$  and Ice were normalized using  $\alpha(\text{K})(307\gamma, \text{E}2)=0.053$  (theory).

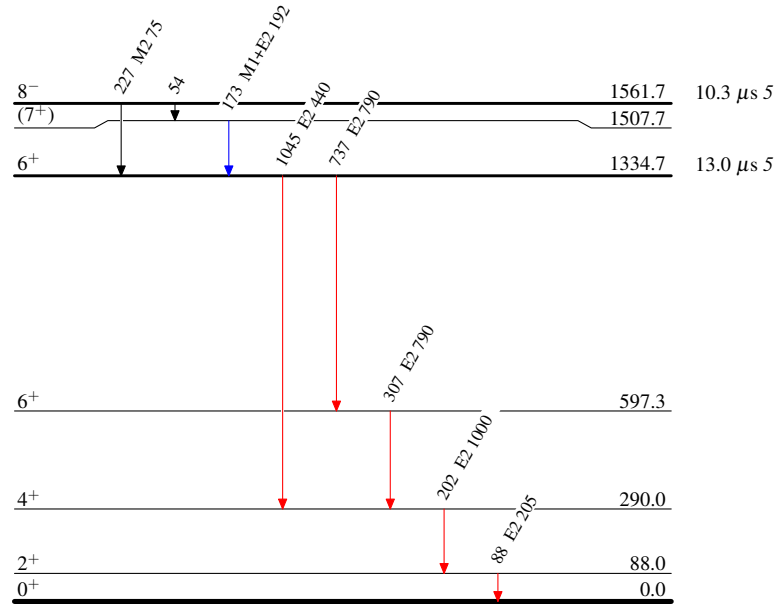
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## Level Scheme

Intensities: Relative  $I_\gamma$ 

## Legend

- $I_\gamma < 2\% \times I_\gamma^{\max}$
- $I_\gamma < 10\% \times I_\gamma^{\max}$
- $I_\gamma > 10\% \times I_\gamma^{\max}$

 $^{176}_{72}\text{Hf}_{104}$