

$^{238}\text{U}(^{18}\text{O},^{20}\text{Ne}\gamma)$  2007Is09

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Shaofei Zhu	NDS 182, 2 (2022).	1-Apr-2022

**2007Is09:** High-spin states in  $^{236}\text{Th}$  were populated by two-proton pickup reaction with a  $^{18}\text{O}$  beam at 162 MeV delivered by JAEA-Tokai tandem accelerator on a 98% enriched  $^{244}\text{Pu}$  target of 0.7 mg/cm<sup>2</sup> thickness. The  $\gamma$  rays were detected by an array of six HPGe detectors, and assigned to  $^{236}\text{Th}$  by  $\gamma$  ray and  $^{20}\text{Ne}$  particle coincidence with  $^{236}\text{Th}$  excitation energy limited at 5 to 11 MeV. Four Si  $\Delta E$ -E detectors at 28° to the beam axis were used for particle detection. Measured  $E_\gamma$ ,  $I_\gamma$ . Deduced levels, J,  $\pi$ . Proposed ground-state band.

 $^{236}\text{Th}$  Levels

E(level) <sup>†</sup>	J $\pi$ <sup>‡</sup>
0 <sup>#</sup>	0 <sup>+</sup>
48.4 <sup>#</sup> 3	2 <sup>+</sup>
160.0 <sup>#</sup> 6	4 <sup>+</sup>
329.4 <sup>#</sup> 7	6 <sup>+</sup>
553.4 <sup>#</sup> 8	8 <sup>+</sup>
826.1 <sup>#</sup> 9	10 <sup>+</sup>

<sup>†</sup> From  $E_\gamma$ .

<sup>‡</sup> Proposed with the assumption of being members of ground state band (2007Is09).

<sup>#</sup> Band(A): Ground-state band.

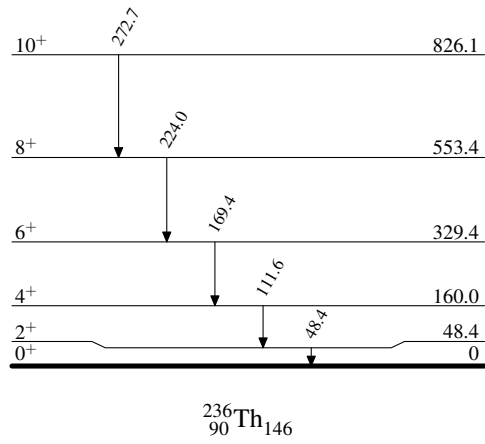
 $\gamma(^{236}\text{Th})$ 

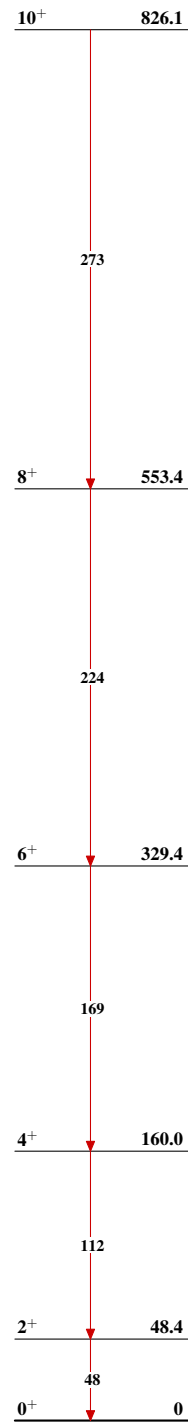
$E_\gamma$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	$I_{(\gamma+ce)}$ <sup>†</sup>	Comments
(48.4 3)	48.4	2 <sup>+</sup>	0	0 <sup>+</sup>		$E_\gamma$ : derived from rotational band properties with Harris expansion: moment of inertia vs. rotational frequency (2007Is09).
111.6 5	160.0	4 <sup>+</sup>	48.4	2 <sup>+</sup>	240 70	
169.4 3	329.4	6 <sup>+</sup>	160.0	4 <sup>+</sup>	100 22	
224.0 3	553.4	8 <sup>+</sup>	329.4	6 <sup>+</sup>	48 12	
272.7 5	826.1	10 <sup>+</sup>	553.4	8 <sup>+</sup>	32 14	

<sup>†</sup> As given by 2007Is09 derived from their measured  $I_\gamma$  and  $\alpha(\text{tot})$  from 1978Ro21 assuming all E2 transitions.

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Legend

Level Scheme-----►  $\gamma$  Decay (Uncertain)

${}^{238}\text{U}({}^{18}\text{O}, {}^{20}\text{Ne}\gamma)$  2007Is09Band(A): Ground-state  
band ${}^{236}_{90}\text{Th}_{146}$