

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia		NDS 127, 69(2015)	1-Apr-2015

$Q(\beta^-)=6490$  58;  $S(n)=6850$  58;  $S(p)=23.26\times 10^3$  11;  $Q(\alpha)=-18060$  64 [2012Wa38](#)

Other reactions:

$^4\text{He}(^{22}\text{O}, ^{22}\text{O}')$ : [2004TaZZ](#) – Measured 3200- and 1400-keV  $\gamma$ -rays in cascade.

$^9\text{Be}(^{26}\text{Ne}, 2pX)$ : [2008Fr10](#) – Studied neutron-unbound states in  $^{22}\text{O}$  – not found.

$\text{C}(^{22}\text{O}, ^{22}\text{O})$ : [2011Ka36](#) – Measured interaction cross section= $1123$  mb 24; uncertainty  $18.5$  mb (stat),  $15.3$  mb (syst). Deduced rms matter radius= $2.75$  fm 15 using Fermi density and  $2.75$  fm 7 using harmonic oscillator density (Glauber model).

 $^{22}\text{O}$  LevelsCross Reference (XREF) Flags

- A  $^{22}\text{N}$   $\beta^-$  decay
- B  $\text{Be}(^{36}\text{S}, X), ^{12}\text{C}(^{23}\text{O}, xn\gamma)$
- C  $^{22}\text{O}(p, p'), (d, d'\gamma)$
- D  $^{197}\text{Au}(^{22}\text{O}, ^{22}\text{O}')$

E(level) <sup>†</sup>	J $\pi$ #	T <sub>1/2</sub>	XREF	Comments
0.0	0 <sup>+</sup>	2.25 s 9	AB D	$\% \beta^- = 100$ ; $\% \beta^- n < 22$ T <sub>1/2</sub> : From <a href="#">2005We06</a> . Other values: 2.25 s 15 ( <a href="#">1989Hu07</a> ), 0.91 s 35 ( <a href="#">1982Mu08</a> ), and 2.9 s 15 ( <a href="#">1986Du07</a> ). $\% \beta^- n$ : from <a href="#">1991Re02</a> . Other reference: <a href="#">1979Ba31</a> .
3199 8	2 <sup>+</sup>	0.40 ps 15	ABCD	XREF: D(3170). J $\pi$ : 3199 $\gamma$ E2 to 0 <sup>+</sup> . T <sub>1/2</sub> : From B(E2) $\uparrow$ =0.0021 8 $^{197}\text{Au}(^{22}\text{O}, ^{22}\text{O}')$ ( <a href="#">2000Th11</a> ) and adopted $\gamma$ -ray properties. Other: Also 0.56 ps 26 from B(E2) $\uparrow$ =0.0015 7 in <a href="#">2000Th11</a> .
4584 9	(3 <sup>+</sup> )		AB	
4909? 90	(0 <sup>+</sup> )		B	
5800?			B	
6512 10	(2 <sup>+</sup> )		AB	
6938 11	(4 <sup>+</sup> )		B	
7649 $\ddagger$	(0 <sup>-</sup> , 1 <sup>-</sup> , 2 <sup>-</sup> )		A	
8783 $\ddagger$	(0 <sup>-</sup> , 1 <sup>-</sup> , 2 <sup>-</sup> )		A	
10554 $\ddagger$	(0 <sup>-</sup> , 1 <sup>-</sup> , 2 <sup>-</sup> )		A	
13298 $\ddagger$	(0 <sup>-</sup> , 1 <sup>-</sup> , 2 <sup>-</sup> )		A	

<sup>†</sup> From  $\gamma$ -ray energies. Levels at 7649 keV and above from  $^{22}\text{N}$   $\beta^-$  decay.

<sup>‡</sup> Level decays by neutrons.

# From comparison with shell model calculations ( $^{22}\text{N}$   $\beta^-$  decay), except otherwise noted.

 $\gamma(^{22}\text{O})$ 

E <sub>i</sub> (level)	J $\pi$ <sub>i</sub>	E $\gamma$ <sup>†</sup>	I $\gamma$ <sup>†</sup>	E <sub>f</sub>	J $\pi$ <sub>f</sub>	Mult.	Comments
3199	2 <sup>+</sup>	3199 8	100	0.0	0 <sup>+</sup>	E2	B(E2)(W.u.)=1.2 5 Mult.: Assigned by evaluator based on B(E2) $\uparrow$ in $^{197}\text{Au}(^{22}\text{O}, ^{22}\text{O}')$ ( <a href="#">2000Th11</a> ).

Continued on next page (footnotes at end of table)

**Adopted Levels, Gammas (continued)** $\gamma({}^{22}\text{O})$  (continued)

$E_i(\text{level})$	$J_i^\pi$	$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_f$	$J_f^\pi$	Comments
4584	(3 <sup>+</sup> )	1385 3	100	3199	2 <sup>+</sup>	$E_\gamma$ : Weighted average of data from ( ${}^{36}\text{S},\text{X}$ ),( ${}^{23}\text{O},\text{xny}$ ) and ${}^{22}\text{N}$ $\beta^-$ decay.
4909?	(0 <sup>+</sup> )	1710 <sup>#</sup> 90	100	3199	2 <sup>+</sup>	
5800?		1216 <sup>‡</sup> #		4584	(3 <sup>+</sup> )	
		2600 <sup>‡</sup> #		3199	2 <sup>+</sup>	
6512	(2 <sup>+</sup> )	3312 5		3199	2 <sup>+</sup>	$E_\gamma$ : From ${}^{22}\text{N}$ $\beta^-$ decay. Other 3310 90 ( ${}^{36}\text{S},\text{X}$ ),( ${}^{23}\text{O},\text{xny}$ ).
6938	(4 <sup>+</sup> )	2354 6	100 35	4584	(3 <sup>+</sup> )	
		3710 90	75 35	3199	2 <sup>+</sup>	

<sup>†</sup> From ( ${}^{36}\text{S},\text{X}$ ),( ${}^{23}\text{O},\text{xny}$ ), except otherwise noted.

<sup>‡</sup> From level-energy difference.

<sup>#</sup> Placement of transition in the level scheme is uncertain.

**Adopted Levels, Gammas**

Legend

Level Scheme

Intensities: Relative photon branching from each level

-----►  $\gamma$  Decay (Uncertain)