

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia		NDS 111,2331 (2010)	30-Jun-2010

$Q(\beta^-)=17358$  6;  $S(n)=2277$  9;  $S(p)=1.721\times 10^4$  10;  $Q(\alpha)=-1.262\times 10^4$  8 [2012Wa38](#)  
 Note: Current evaluation has used the following Q record 17270 30 2370 30  $17.0\times 10^{33}$   $-1232e^+117$  [2009AuZZ](#).  
 $Q(\beta^-)=17270$  30,  $S(n)=2380$  30,  $S(p)=17000$  300,  $Q(\alpha)=-12340$  170 ([2003Au03](#)).

Nuclear effective root-mean-square (rms) radius measurement: 3.10 fm 3 and 3.13 fm 4, restricting size and diffuseness parameters, respectively ([1998Su07](#),[1997Su04](#)).

[2007No13](#): Production cross sections  $\sim 0.1$   $\mu\text{b}$  measured in fragmentation of  $^9\text{Be}(^{40}\text{Ar},\text{X})$ :  $E=90\alpha$  MeV.

In [2006Kh08](#), 46.97 and 41.00 MeV/A beams of  $^{30}\text{Na}$  impinging on a Si target, measured  $\sigma=2363$  mb 28 and  $\sigma=2402$  mb 29, respectively, for the  $\text{Si}(^{30}\text{Na},\text{x})$  reaction and a reduced strong absorption radius of  $\langle r_0^2 \geq 1.222 \text{ fm}^2$  10 is deduced and used to study the isospin dependence.

Mass measurement: [2006Ga04](#), [2002To12](#), [2001Lu17](#).

Recent Structure Calculations: [2006Ko02](#), [2004Ge02](#), [2004Kh16](#), [2004La24](#), [2004Ot02](#), [2004Ut03](#), [2002Ut02](#), [2001Ga46](#).

 $^{30}\text{Na}$  LevelsCross Reference (XREF) Flags

- A  $^{30}\text{Ne}$   $\beta^-$  decay
- B  $^1\text{H}(^{30}\text{Na}, ^{30}\text{Na}'\gamma)$ ,
- C Coulomb excitation

E(level) <sup>†</sup>	$J^\pi$ <sup>‡</sup>	$T_{1/2}$	XREF	Comments
0	$2^+$	48 ms 2	ABC	$\% \beta^- = 100$ ; $\% \beta^- n = 30$ 4; $\% \beta^- 2n = 1.15$ 25 ( <a href="#">1984Gu19</a> ); $\% \beta^- \alpha = 5.5 \times 10^{-5}$ 2 ( <a href="#">1983De23</a> ) $\mu = +2.069$ 2 $Q = +0.15$ 4 $J^\pi$ : spin measured by LASER spectroscopy ( <a href="#">1978Hu12</a> ), parity from shell model systematics. $T_{1/2}$ : from <a href="#">1984La01</a> . Other value: 50 ms 4 ( <a href="#">1999DI01</a> ). $\mu$ : from <a href="#">2000Ke09</a> . Other value: +2.083 10 ( <a href="#">1978Hu12</a> ). $Q$ : value from <a href="#">2002Pr12</a> ((Coulomb excitation) – spectroscopic quadrupole moment deduced by the evaluator from reported intrinsic quadrupole moment of 51 fm <sup>2</sup> 15). Other: +0.14 1 ( <a href="#">1998KeZY</a> ( $\beta$ -NMR) – value estimated from Figure 3 by the evaluator), <a href="#">1998KeZY</a> notes that the measured value is of about 0.24 barn higher than the calculated value for sd-shell nuclei and did not report in their primary publication <a href="#">2000Ke09</a> .
150.62 20	$1^+$		A	$J^\pi$ : strongly populated in $^{30}\text{Ne}$ $\beta^-$ decay: $\log ft$ 4.04.
360 13			B	
424 3	$(3^+)$		BC	$J^\pi$ : from comparison of experimental and MCSM calculated level energies.
516.1 5	$(2^+)$		A	
926.0 6	$(1^+)$		A	
2113.6 6	$(1^+)$		A	

<sup>†</sup> From a least-squares fit to the  $\gamma$ -ray energies.

<sup>‡</sup> Based on  $^{30}\text{Ne}$   $\beta^-$  decay feeding from  $0^+$  g.s., except otherwise noted.

Adopted Levels, Gammas (continued)

$\gamma(^{30}\text{Na})$						
$E_i(\text{level})$	$J_i^\pi$	$E_\gamma^\dagger$	$I_\gamma$	$E_f$	$J_f^\pi$	Comments
150.62	1 <sup>+</sup>	150.6 2	100	0	2 <sup>+</sup>	E <sub>γ</sub> : from <sup>1</sup> H( <sup>30</sup> Na, <sup>30</sup> Na'γ) dataset. E <sub>γ</sub> : from Coulomb Excitation (2008Et01). Other: 403 keV 18 in <sup>1</sup> H( <sup>30</sup> Na, <sup>30</sup> Na'γ) (2006El03).
360		360 13	100	0	2 <sup>+</sup>	
424	(3 <sup>+</sup> )	424 3	100	0	2 <sup>+</sup>	
516.1	(2 <sup>+</sup> )	365.5 5	100	150.62	1 <sup>+</sup>	
926.0	(1 <sup>+</sup> )	410.0 5	100 16	516.1	(2 <sup>+</sup> )	
		775 1	22 8	150.62	1 <sup>+</sup>	
2113.6	(1 <sup>+</sup> )	1597 1	100 20	516.1	(2 <sup>+</sup> )	
		1963 1	100 20	150.62	1 <sup>+</sup>	
		2114 1	80 20	0	2 <sup>+</sup>	

† From <sup>30</sup>Ne β<sup>-</sup> decay, except otherwise noted.

Adopted Levels, GammasLevel Scheme

Intensities: Relative photon branching from each level

