

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia		NDS 113,909 (2012)	1-Jan-2012

Q(β^-)=13283 14; S(n)=4403 13; S(p)=1.590×10⁴ 10; Q(α)=-1.111×10⁴ 8 [2012Wa38](#)
 Note: Current evaluation has used the following Q record 13272 17 4413 16 1591e+110-11120 80 [2011AuZZ,2003Au03](#).

[2007No13](#): ~5 μ b and ~7 μ b production cross sections were measured for ²⁹Na in ⁹Be(⁴⁰Ar,X): E=90 MeV/nucleon, 94 MeV/nucleon and ¹⁸¹Ta(⁴⁰Ar,X): E=94 MeV/nucleon, reactions, respectively.

[2006Kh08](#): ²⁹Na beam, 50.26 and 43.90 MeV/nucleon, bombarded a Si target, measured σ =2288 mb 24 and σ =2304 mb 17, respectively, for the Si(²⁹Na,x) reaction and a squared reduced absorption radius $r_0^2=1.197$ fm² 7 is deduced and used to study the isospin dependence.

[2000PrZX](#): Reports on one neutron stripping in ¹⁹⁷Au(³⁰Na,²⁹Na), σ =39.3 mb 182, and an unplaced γ -ray of energy 700 keV 20. Secondary beam ³⁰Na was obtained from ⁴⁸Ca fragmentation, 80 MeV/nucleon, on a ⁹Be target at NSCL, Michigan State University.

²⁹Na Levels

Cross Reference (XREF) Flags

- A ²⁹Ne β^- decay
- B Coulomb excitation

E(level)	J ^{π}	T _{1/2}	XREF	Comments
0	3/2 ⁺	44.1 ms 9	A	$\% \beta^- = 100$; $\% \beta^- n = 21.5$ 30 $\mu = +2.449$ 8; Q=+0.086 3 J ^{π} : spin from LASER measurement (1978Hu12). Parity from shell model. T _{1/2} : Weighted average of 44.9 ms 12 (1984Gu19) and 42.9 ms 15 (1974Ro31). Matter radius $\langle r^2 \rangle^{1/2} = 3.03$ fm 4 and 3.05 fm 6 (1998Su07 and 1997Su04). μ : From 1978Hu12 . Also in 2005St24 , 2011StZZ . Q: From 2000Ke09 . Other: +0.025 54 (1982To05) is recalculated to 0.038 47 in 2005Ke09 , using new reference values for ²³ Na. Also in 2005St24 , 2011StZZ . $\% \beta^- n$: From 1984Gu19 . Other: 15.1% 18 (1974Ro31) normalized with P _n (⁹ Li)=35.0%. P _n (⁹ Li)=51% 1 (1981La11) gives 22.0% 26. J ^{π} : From ²⁹ Ne β^- decay, feeding from (3/2 ⁺), and shell model prediction (2005Tr05).
72	(5/2 ⁺)		AB	
1249			A	
1588			A	
3059			A	
3723			A	
4166			A	

γ (²⁹Na)

In [2006FuZX](#), E γ =1732.8 keV 41 is listed for ²⁹Na without placement in the level scheme.

E _i (level)	J _i ^{π}	E γ [†]	I γ [†]	E _f	J _f ^{π}
72	(5/2 ⁺)	72	100	0	3/2 ⁺
1249		1176.5 10	42 8	72	(5/2 ⁺)

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued) $\gamma({}^{29}\text{Na})$ (continued)

<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_γ^\dagger</u>	<u>I_γ^\dagger</u>	<u>E_f</u>	<u>J_f^π</u>	<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_γ^\dagger</u>	<u>I_γ^\dagger</u>	<u>E_f</u>	<u>J_f^π</u>
1249		1249	100 8	0	3/2 ⁺	3723		3723	100	0	3/2 ⁺
1588		339 [‡]		1249		4166		2578	100 20	1588	
		1516	100 12	72	(5/2 ⁺)			2918.2 15	70 10	1249	
		1588	69 12	0	3/2 ⁺			4094	24 8	72	(5/2 ⁺)
3059		3059	100	0	3/2 ⁺			4166	58 12	0	3/2 ⁺

[†] From ${}^{29}\text{Ne}$ β^- decay.

[‡] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

-----▶ γ Decay (Uncertain)