

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS	112,1875 (2011)	30-Nov-2010

$Q(\beta^-)=1.759\times 10^4$ 20; $S(n)=2.11\times 10^3$ 21; $S(p)=1.739\times 10^4$ 25; $Q(\alpha)=-1.61\times 10^4$ *syst* 2012Wa38

Note: Current evaluation has used the following Q record 17.6E3 2 2.1E3 2 17802 *syst* -16238 *syst* 2011AuZZ.

$\Delta S(p)=241$ (*syst*); $\Delta Q(\alpha)=353$ (*syst*) (2011AuZZ).

$Q(\beta^-)=17900$ 400, $S(n)=1400$ 400, $S(p)=18100$ 500(*syst*), $Q(\alpha)=-15900$ 500(*syst*) 2003Au03.

Some recent nuclear structure calculations: 2006Ko02, 2004La24, 2004Mi31, 2002Ka73, 2002St29.

Atomic mass excess measurement: 24630 keV 190 (2007Ju03).

Measured ^{27}F production cross-sections: $\sigma_f=2.1$ nb 7 from ^{40}Ar fragmentation, $E=1.06$ GeV/u, on Be target (2000Oz01).

38.97 MeV/u and 34.00 MeV/u beams of ^{27}F on a Si target, measured $\sigma=2096$ (164) mb and $\sigma=2468$ (256) mb, respectively, for the $\text{Si}(^{27}\text{F},x)$ reaction (2006Kh08). A squared reduced absorption radius of $r_0^2=1.16$ (7) fm^2 is deduced and used to study the isospin dependence.

 ^{27}F LevelsCross Reference (XREF) Flags

A $^1\text{H}(^{27}\text{F},^{27}\text{F}'\gamma)$
 B $^9\text{Be}(^{29}\text{Ne},\text{N}26\text{F})$

E(level)	J^π	$T_{1/2}$	XREF	Comments
0.0	(5/2 ⁺)	5.0 ms 2	AB	$\% \beta^- = 100$; $\% \beta^- n = 77$ 21 $\% \beta^- n$: From 1999Re16. Other: 90 30 (1999DI01). J^π : From systematics of odd mass fluorine isotopes (2003Au02). $T_{1/2}$: Weighted average of 5.3 ms 9 (β -decay time spectrum-1997Ta22), 5.2 ms 3 (1999DI01), 6.5 ms 11 (1999Re16), and 4.9 ms 2 (1998NoZW).
777	(1/2 ⁺)		A	E(level), J^π : The shell model calculation predicts a level energy for the 1/2 ⁺ excited state at 1100 keV. An excited state closer to this energy can be constructed using the 504 γ and 777 γ in cascade. However, a state directly feeding the g.s. is more likely (2004EI10).
1281?	(1/2 ⁻)		A	E(level), J^π : From 777 keV + 504 keV γ -rays. Spin/parity assignment from a comparison to other fluorine isotopes, however was not supported by theoretical calculations. The derived octapole deformation parameter $\beta_3=0.7$ 2 do not contradict with the assumption of the existence of a deformed 1/2 ⁻ state in ^{27}F .
2.50×10^3 22		10 keV	B	

 $\gamma(^{27}\text{F})$

$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π
777	(1/2 ⁺)	777 19	100	0.0	(5/2 ⁺)
1281?	(1/2 ⁻)	504 [†] 15		777	(1/2 ⁺)

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

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Legend

Level Scheme

Intensities: Relative photon branching from each level

-----► γ Decay (Uncertain)

