Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia and A. M. Hurst	NDS 134, 1 (2016)	1-Feb-2016

Q(β^-)=18190 *80*; S(n)=7.7×10^2 *11*; S(p)=15.97×10^3 *14*; Q(α)=−15.80×10^3 *21* 2012Wa38

Time-of-Flight spectrometer at the LAMPF accelerator (1995ReZZ).
Particle stability established in beryllium + ^{48}Ca reactions (1979We10) and thorium + p reactions (1988Wo09).

Production cross section ~0.05 μb, measured in ^{40}Ar fragmentation reaction of ^{9}Be(^{40}Ar,X), E=90A MeV − 2007No13. In 2006Kh08, cross section=2221 mb *52* at magnetic rigidity ($B\rho$)=2.753 Tm, E=42.03 MeV/u and cross section=2424 mb *71* at $B\rho$=2.575 Tm, E=36.69 MeV/u for Si(^{28}Ne,X) and related reduced strong absorption radius $<r_0^2>$=1.225 fm^2 *22* are measured. The later one is used to study the isospin dependence of the reduced strong absorption radius. Measured ^{26}F production cross sections: σ_F=0.048 μb *15* from ^{40}Ar fragmentation, E=1.06 GeV/u, on Be target (2000Oz01); 2003Oz01 reported fragmentation cross section from ^{40}Ar, E=94 MeV/u, σ_F=0.001 μb *4* on Be target and σ_F=0.26 μb *8* on Ta target.

2001Oz03: Due to poor statistics, unable to determine the halo structure of ^{26}F from the measured interaction cross section of ^{26}F with C target.

2010Ro23: Measured one-neutron-removal cross section σ_{1n}=110 mb *24*.

^{26}F Levels

Cross Reference (XREF) Flags

- A ^{26}F IT decay (2.2 ms)
- B ^{1}H(^{27}F,^{26}Fγ)
- C ^{9}Be(^{26}Ne,N25F)
- D ^{12}C(^{27}Na,^{26}Fγ)

E(level)	J$^\pi$†	T$_{1/2}$	XREF	Comments
0.0	1$^+$	8.2 ms *9*	AB D	%β^-=100; %β^-n=13.5 *40* J$^\pi$: Log *ft*=4.9 to 0$^+$, Log *ft*=4.6 to 2$^+$. J$^\pi$=1$^+$ is consistent with the Gallagher-Moszkowski spin-coupling rule for configuration $\pi d_{5/2}\otimes\nu d_{3/2}$. T$_{1/2}$: Weighted average of 7.8 ms *6* (2013Le03 − Figure 2), and 10.2 ms *14* (1999Re16). Half-lives were measured from γ(t) measurements. Others: 9.6 ms *8* (1999Dl01,2001Pe14 − value from the same research group of 1999Re16), 7.7 ms *2* − 1672.5γ(t) and 7.8 ms *5* − 1797.1γ(t) growth (due to IT decay) curve fitting (2013Le03). %β^-n: Average value of 16 *4* (2013Le03) and 11 *4* (1999Re16,2001Pe14). Uncertainty − from input value.
643.4 *1*	(4$^+$)	2.2 ms *1*	A	%IT=82 *11*; %β^-=18 *11*; %β^-n=12 *8* E(level): 2013Le03 state that the 643.4-keV, 4$^+$ isomer may correspond to the 657 keV *7*, 2$^+$ level. Further, 2013Le03 state that the energy of the isomer is ≈650 *10* keV. See spin-parity comments. J$^\pi$: From shell model calculations in 2013Le03, assuming 643.4γ as a M3 transition to 1$^+$. If this excited level is considered to be the same as 657 keV *7*, the hypothesis of isomerism of 4$^+$ state would be due to the emission of a very low energy 4$^+$ to 2$^+$ transition (up to 10 keV (to ensure having a long-lived isomer), then followed by 2$^+$ to 1$^+$ transition − noted in 2013Le03. T$_{1/2}$: From 643.4γ(t) (2013Le03). %IT: From 2013Le03. May be considered an estimated value, since three decay modes of this isomeric state, i.e. IT, β^-, and β^-n, coupled with same decay product through β^-n

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Adopted Levels, Gammas (continued)

^{26}F Levels (continued)

E(level)	J$^{\pi}$ †	XREF	Comments
			decay branch of ^{26}F ground state make the measurements a challenge. Reported isomeric ratio R=42 *8%* in 2013Le03 may also be considered as an estimated value for aforementioned reasons. %β^-: From 100 − %IT. %β^-n: 65 *18%* of %β^-=18 *11* β- branch of 4$^+$ isomeric state (e-mail communication with A. Lepailleur ((1st author of 2013Le03): dated Sept 10, 2015). Note that 2013Le03 do not seem to provide explanation or methodology for the extraction of %β^-n decay mode with a relative value of 65% *18*.
657 *7*	(2$^+$)	B D	J$^{\pi}$: Shell model calculations predict 2$^+$ state as the 2nd excited excited state in ^{26}F (2004El10 − ^{1}H(^{27}F,^{26}Fγ)).
1.05×10^3 *12*		C	E(level): Deduced by evaluators from E(res)=271 keV *37**(Mass(^{25}F)+ Mass(n))/Mass(^{25}F) + Sn(^{26}F)=770 keV *110* (2012Wa38). 2011Fr13 deduced 1072 keV *120*, using separation energy obtained from excess mass: 18680 keV 80 (2007Ju03). In the decay spectrum, a broad peak was fitted considering a single resonance. Shell model calculations predict several unbound states.

† From shell model calculations, except otherwise noted.

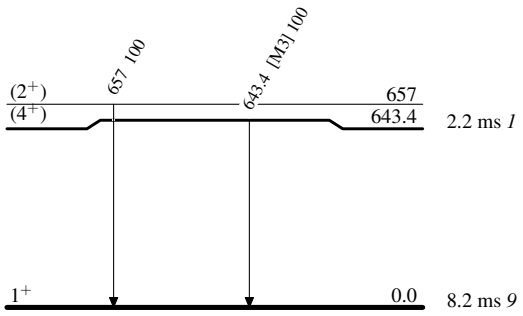
γ(^{26}F)

E$_i$(level)	J$_i^{\pi}$	E$_{\gamma}$	I$_{\gamma}$	E$_f$	J$_f^{\pi}$	Mult.	Comments
643.4	(4$^+$)	643.4 *1*	100	0.0	1$^+$	[M3]	E$_{\gamma}$: Delayed transition. Not observed in coincidence with β transitions from ground state.
657	(2$^+$)	657 *7*	100	0.0	1$^+$		E$_{\gamma}$: From 2012St01 (^{27}Na,^{26}Fγ). Other: 665 *12* (2004El10 − (^{27}F,^{26}Fγ)).

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{26}_{9}F_{17}$