

^{26}F β^- decay (8.2 ms) 2013Le03,1999Re16

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

Parent: ^{26}F : $E=0.0$; $J^\pi=(1^+)$; $T_{1/2}=8.2$ ms 9; $Q(\beta^-)=18190$ 80; $\% \beta^-$ decay=100.0

2013Le03: ^{26}F was produced from fragmentation of a primary beam of ^{36}S , $E=77.6$ MeV/nucleon on a Be target (thickness 237 mg/cm²); Separated by LISE spectrometer at GANIL, identified from energy loss in a stack of Si detectors and time-of-flight; Implanted in a 1 mm-thick double-sided Si stripped (DSSSD) detector, surrounded by four clover HPGe detectors; $\beta\gamma$ and $\gamma\gamma$ coincidences, deduce level scheme, half-life. Shell model calculations.

1999Re16: ^{26}F was produced by Ta(^{36}S ,X), $E(^{36}\text{S})=2.8$ GeV; Magnetic Spectrometer (LISE3); nuclides were identified by TOF and energy loss in Si; 6 Si and 4 HPGe and 42 ^3He proportional counters; Measured: $E\gamma$, $I\gamma$, $\beta\gamma$ coin, t, β^- n.

 ^{26}Ne Levels

E(level) [†]	J^π [‡]	$T_{1/2}$ [‡]	Comments
0.0	0^+	197 ms 1	
2018.0 3	2^+		
3690.8 4	(2^+)		J^π : From Adopted Levels. 1999Re16 tentatively assign $J^\pi=0^+$, as in 1980Na12 from $^{26}\text{Mg}(\pi^-, \pi^+)$ studies.
3815.2 5	(0^+)		E(level): 1999Re16 note a few observed events at about 3750 keV which expected to be the 0^+ state. However, without any associated γ transitions, 1999Re16 tentatively assign 0^+ state for 3691 keV level. It appears that 3750 could be a doublet of 3691 and 3815 keV levels.
S(n)+x			E(level): Sn(^{26}Ne)=5530 50 (2012Wa38).

[†] From least-squares fit to γ -ray energies.

[‡] From Adopted Levels.

 β^- radiations

E(decay)	E(level)	$I\beta^-$ ^{†‡}	Log ft	Comments
(6×10^3 # 6)	S(n)+x	13.5 40		$I\beta^-$: From $\% \beta^-$ n=13.5 40 (2013Le03).
(1.437×10^4 8)	3815.2	2.3 4	5.6 1	av $E\beta=6920$ 40
(1.450×10^4 8)	3690.8	12.0 11	4.8 1	av $E\beta=6981$ 40
(1.617×10^4 8)	2018.0	36 7	4.5 1	av $E\beta=7808$ 40
(1.819×10^4 8)	0.0	36.5 60	4.8 1	av $E\beta=8804$ 40
				$I\beta^-$: 34 6 in 2013Le03 . 36.5 60 by evaluators for $\Sigma I\beta=100$.

[†] From γ -ray intensity balance by evaluators. $\% \beta^-$ n=13.5 40 (**2013Le03**).

[‡] Absolute intensity per 100 decays.

Estimated for a range of levels.

 $\gamma(^{26}\text{Ne})$

$I\gamma$ normalization: Absolute γ intensities are provided by **2013Le03**. See comments for $I\gamma$.

Continued on next page (footnotes at end of table)

$^{26}\text{F} \beta^-$ decay (8.2 ms) 2013Le03,1999Re16 (continued) $\gamma(^{26}\text{Ne})$ (continued)

E_γ	$I_\gamma^{\ddagger@}$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	$\alpha^\#$	Comments
1672.75 25	12.0 11	3690.8	(2 ⁺)	2018.0	2 ⁺	[M1]	1.21×10^{-4}	$\alpha(\text{K})=3.02 \times 10^{-6}$ 5; $\alpha(\text{L})=1.671 \times 10^{-7}$ 24 $\alpha(\text{IPF})=0.0001182$ 17 E_γ : Unweighted average of 1673.0 3 (1999Re16) and 1672.5 3 (2013Le03).
1797.1 4	2.3 4	3815.2	(0 ⁺)	2018.0	2 ⁺	[E2]	2.20×10^{-4}	$\alpha(\text{K})=3.13 \times 10^{-6}$ 5; $\alpha(\text{L})=1.734 \times 10^{-7}$ 25 $\alpha(\text{IPF})=0.000217$ 3 E_γ : From 2013Le03.
2017.9 3	50 6	2018.0	2 ⁺	0.0	0 ⁺	E2	3.25×10^{-4}	$\alpha(\text{K})=2.52 \times 10^{-6}$ 4; $\alpha(\text{L})=1.398 \times 10^{-7}$ 20 $\alpha(\text{IPF})=0.000323$ 5 E_γ : Unweighted average of 2018.2 1 (1999Re16) and 2017.6 3 (2013Le03).

^x2901 †^x4153 †† Unplaced in the ^{26}F decay scheme (2013Le03).‡ Obtained from A. Lepailleur (1st author of 2013Le03) through e-mail communications (Sept 16, 2015) for 100 ^{26}F decay.

Additional information 1.

@ Absolute intensity per 100 decays.

^x γ ray not placed in level scheme. $^{26}\text{F} \beta^-$ decay (8.2 ms) 2013Le03,1999Re16

Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

Legend

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$
- Coincidence

