^{23}F β^- decay 1974Go17

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia[#], A. Chakraborty[##]	NDS 171, 1 (2021)	1-Jun-2020

Parent: ^{23}F: E=0.0; J^π=(5/2$^+$); $T_{1/2}$=2.23 s *14*; Q(β^-)=8440 *30*; %β^- decay=100.0

^{23}F was produced by ^{10}Be(^{18}O,αp) with beam energy of 42 MeV. The target was enriched to 94% in ^{10}Be. Ge(Li) and NE102 detectors were used. Measured half-life, Eβ, Eγ, Iβ, Iγ and $\beta\gamma$ coincidences.

^{23}Ne Levels

E(level)[†]	J$^\pi$[#]	$T_{1/2}$	Comments
0.0	5/2$^+$	37.25 s *10*	$T_{1/2}$: from Adopted Levels.
1016.9 *4*	1/2$^+$		
1701.52 *15*	(7/2$^+$)		
1822.29 *21*	3/2$^+$		
2314.9 *6*	5/2$^+$		
2516.6 *5*	(5/2,7/2)		
3220.69[‡] *5*	3/2$^-$[‡]		
3431.5 *4*	3/2$^+$		
3830.9 *4*	(3/2,5/2,7/2)$^+$		
3836.35[‡] *6*	1/2$^-$[‡]		
4435.9 *5*	(3/2,5/2,7/2)$^+$		
5201+x			E(level): From S(n)=5200.65 *10* (^{23}Ne) and x<3239 *30* [from Q(β^-) (^{23}F)=8440 *30*-S(n)(^{23}Ne) (2017Wa10)].

[†] From least-squares fit to γ-ray energies.
[‡] From Adopted Levels. Listed for beta feeding in Table II (1974Go17).
[#] From Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-[†‡]	Log *ft*	Comments
(1.6×10^3[#] *16*)	5201+x	<14		Iβ^-: %β^-n < 14 (from ^{23}F Adopted Levels).
(4.00×10^3 *3*)	4435.9	9	4.7	av Eβ=1800 *15*
(4.60×10^3 *3*)	3836.35	<1.1	>5.9	Iβ^-: From 1974Go17.
(4.61×10^3 *3*)	3830.9	22	4.6	av Eβ=2095 *15*
(5.01×10^3 *3*)	3431.5	12	5.0	av Eβ=2291 *15*
(5.22×10^3 *3*)	3220.69	<1.2	>6.1	Iβ^-: From 1974Go17.
(5.92×10^3 *3*)	2516.6	2.5	6.1	av Eβ=2741 *15*
(6.13×10^3 *3*)	2314.9	5.6	5.8	av Eβ=2840 *15*
(6.62×10^3 *3*)	1822.29	11	5.6	av Eβ=3083 *15*
(6.74×10^3 *3*)	1701.52			Iβ^-: γ-ray intensity balance yields −1 *4*. Expected as an allowed transition from (5/2$^+$) to (7/2$^+$).
(7.42×10^3 *3*)	1016.9	<3	>6.4	av Eβ=3481 *15*
(8.44×10^3 *3*)	0.0	30 *8*	5.7 *1*	av Eβ=3983 *15* Iβ^-: From 1987DuZU.

[†] From γ-ray intensity balance, except where otherwise noted.
[‡] Absolute intensity per 100 decays.
[#] Estimated for a range of levels.

^{23}F β^- decay 1974Go17 (continued)

$\gamma(^{23}Ne)$

Iγ normalization: Normalized assuming $\Sigma I\gamma$(g.s.)=63 *11* (100 − 30 *8* (g.s. feeding (1987DuZu)) − 7 *7* (1/2 of the $\%\beta^-$n limit of <14 (1995ReZZ,2008ReZZ))).

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	Comments
493.0 *7*	10.8 *28*	2314.9	$5/2^+$	1822.29	$3/2^+$			
815.2 *5*	24.8 *47*	2516.6	(5/2,7/2)	1701.52	$(7/2^+)$			
1016.7 *5*	20.1 *55*	1016.9	$1/2^+$	0.0	$5/2^+$			
1701.44 *15*	100.0 *47*	1701.52	$(7/2^+)$	0.0	$5/2^+$	D(+Q)	+0.11 *12*	
1822.25 *21*	47.4 *26*	1822.29	$3/2^+$	0.0	$5/2^+$			
1919.3 *5*	19.3 *25*	4435.9	$(3/2,5/2,7/2)^+$	2516.6	(5/2,7/2)			
2128.8 *7*	68 *11*	3830.9	$(3/2,5/2,7/2)^+$	1701.52	$(7/2^+)$			
2314.2 *8*	7.7 *27*	2314.9	$5/2^+$	0.0	$5/2^+$			
2414.3 *4*	14.8 *34*	3431.5	$3/2^+$	1016.9	$1/2^+$			
2515.9 *13*	2.9 *10*	2516.6	(5/2,7/2)	0.0	$5/2^+$			E_γ: Seen only in coincidence spectra.
2734.2 *5*	11.9 *16*	4435.9	$(3/2,5/2,7/2)^+$	1701.52	$(7/2^+)$			
3431.4 *4*	25.4 *16*	3431.5	$3/2^+$	0.0	$5/2^+$			
3830.7 *4*	6.8 *9*	3830.9	$(3/2,5/2,7/2)^+$	0.0	$5/2^+$			

[†] From 1974Go17.
[‡] For absolute intensity per 100 decays, multiply by ≈0.30.

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Decay Scheme

Intensities: I_γ per 100 parent decays