

Table 19.14 from (1972AJ02): Energy levels of ^{19}F from $^{18}\text{O}(p, p)^{18}\text{O}$ and $^{18}\text{O}(p, \alpha)^{15}\text{N}$

E_p^a (MeV \pm keV)	Γ_{lab} (keV)	Particles out	Γ_p (keV)	Γ_α (keV)	J^π	E_x (MeV)	Refs.
0.6326 ± 0.4	2.1 ± 0.1	p_0	0.065 ± 0.006	2.0 ± 0.2	$\frac{3}{2}^-$	8.5921	(1962YA03, 1962YA1B)
0.680	100	p_0	5	95	$\frac{1}{2}^+$	8.637	(1962YA03, 1962YA1B)
0.846 ± 1.5	47 ± 1	p_0, α_0	26 ± 1.5	21 ± 1	$\frac{1}{2}^+; T = \frac{3}{2}$	8.794	(1960CL02, 1961CA02, 1962YA03, 1962YA1B, 1963KA25, 1968YA03)
0.9870 ± 0.7	3.8 ± 0.2	p_0, α_0	0.080 ± 0.007	3.7 ± 0.3	$\frac{3}{2}^-$	8.928	(1960CL02, 1961CA02, 1962YA03, 1962YA1B, 1963AM1A, 1963KA25, 1964AM1A)
(1.135)	140					(9.068)	(1963AM1A, 1964AM1A)
1.1685 ± 0.5	0.60 ± 0.03	p_0, α_0	0.005 ± 0.0006	0.595 ± 0.08	$\frac{7}{2}^+$	9.0995	(1960CL02, 1961AM01, 1961CA02, 1962YA03, 1962YA1B, 1963AM1A, 1964AM1A)
1.2390 ± 1	6.1 ± 0.3	$p_0, (\alpha_0)$	0.40 ± 0.03	5.7 ± 0.4	$\frac{1}{2}^+$	9.166	(1962YA03, 1962YA1B, 1963AM1A, 1964AM1A)
1.4025 ± 1	5.2 ± 0.2	p_0, α_0	0.23 ± 0.02	5.0 ± 0.4	$\frac{1}{2}^+$	9.321	(1960CL02, 1961CA02, 1962YA03, 1962YA1B, 1963AM1A, 1964AM1A, 1964KA1B)
1.620 ± 6	30	p_0, α_0			$(\frac{5}{2})$	9.527	(1960CL02, 1961CA02, 1963AM1A, 1964AM1A, 1964KA1B)
1.668 ± 6	27	p_0, α_0			$\frac{3}{2}$	9.572	(1960CL02, 1961CA02, 1963AM1A, 1964AM1A, 1964KA1B)
1.766 ± 3	3.6	p_0, α_0	2.1	1.5	$\frac{3}{2}^+$	9.665	(1960CL02, 1961CA02, 1962SO01, 1963AM1A, 1964AM1A, 1964KA1B, 1964ST1E, 1969SE02, 1969SE03)
1.928 ± 3	0.16	p_0, α_0	0.09	0.07	$(\frac{5}{2}, \frac{7}{2})^-$	9.819	(1960CL02, 1961CA02, 1962SO01, 1963AM1A, 1964AM1A, 1964KA1B, 1964ST1E, 1969SE02, 1969SE03)
2.001 ± 4	31	p_0, α_0	12	19	$\frac{1}{2}^+$	9.888	(1960CL02, 1961CA02, 1962SO01,

Table 19.14 from (1972AJ02): Energy levels of ^{19}F from $^{18}\text{O}(p, p)^{18}\text{O}$ and $^{18}\text{O}(p, \alpha)^{15}\text{N}$ (continued)

E_p^a (MeV \pm keV)	Γ_{lab} (keV)	Particles out	Γ_p (keV)	Γ_α (keV)	J^π	E_x (MeV)	Refs.
2.2630 ± 0.7	5.0 ± 1.0	$\alpha_0, \alpha_1, \alpha_2$	≈ 5	0.004^d	$\frac{3}{2}^-$	10.136	1963AM1A, 1964AM1A, 1964KA1B, 1964ST1E, 1969SE02, 1969SE03)
2.289 ± 3	33	p_0, α_0	2.3	(1.0)	$\frac{1}{2}^+$	10.161	A (1960CL02, 1961CA02, 1962SO01, 1963GO08, 1964KA1B, 1964ST1E, 1969SE02, 1969SE03)
2.363 ± 3	4.5	p_0, α_0	2.8	1.7	$\frac{1}{2}^+$	10.231	(1960CL02, 1962SO01, 1963GO08, 1964KA1B, 1964ST1E, 1969SE02, 1969SE03)
2.387 ± 3	24	p_0, α_0	11	13	$\frac{3}{2}^+$	10.253	(1960CL02, 1961CA02, 1962SO01, 1963GO08, 1964KA1B, 1964ST1E, 1969SE02, 1969SE03)
2.443 ± 4	9.7	p_0, α_0	5.2	4.5	$\frac{3}{2}^+$	10.306	(1960CL02, 1961CA02, 1962SO01, 1963GO08, 1964KA1B, 1964ST1E, 1969SE02, 1969SE03)
2.644 ± 3	4.6	$p_0, p_1, \alpha_0, \alpha_{1+2}$	2.4	(1.0)	$\frac{3}{2}^+$	10.497	(1960BL05, 1960CL02, 1961CA02, 1962SO01, 1963GO08, 1964ST1E, 1967PR04, 1969SE02, 1969SE03)
2.705 ± 3	8 ± 2	p_1, α_0			$\frac{3}{2}(^+); (T = \frac{3}{2})$	10.554	(1960CL02, 1961CA02, 1962SO01, 1963GO08, 1964ST1E, 1967PR04)
2.732 ± 4	23 ± 3	p_1, α_0			$(\frac{5}{2}^+)$	10.580	(1960CL02, 1961CA02, 1962SO01, 1963GO08, 1964ST1E, 1967PR04)
2.768 ± 3	4.0	$p_0, p_1, \alpha_0, \alpha_{1+2}$	0.7	(1.0)	$\frac{5}{2}^+; T = \frac{3}{2}^b$	10.614	(1960BL05, 1960CL02, 1961CA02, 1962SO01, 1963GO08, 1964ST1E, 1967PR04, 1969SE02, 1969SE03)
2.925 ± 3	5.7	$p_0, p_1, \alpha_0, \alpha_{1+2}$	4.5	1.2	$\frac{1}{2}^-$	10.763	(1960BL05, 1960CL02, 1961CA02, 1962SO01, 1963GO08, 1964ST1E, 1967PR04, 1969SE02, 1969SE03)

Table 19.14 from (1972AJ02): Energy levels of ^{19}F from $^{18}\text{O}(p, p)^{18}\text{O}$ and $^{18}\text{O}(p, \alpha)^{15}\text{N}$ (continued)

E_p^a (MeV \pm keV)	Γ_{lab} (keV)	Particles out	Γ_p (keV)	Γ_α (keV)	J^π	E_x (MeV)	Refs.
3.029 ± 4	19.5	$p_0, p_1, \alpha_0, \alpha_{1+2}$	13.0		$\frac{5}{2}^+$	10.861	(1960CL02, 1961CA02, 1962SO01, 1963GO08, 1964ST1E, 1969DI07, 1969SE02, 1969SE03)
(3.06)		α_0				(10.89)	(1963GO08)
3.148 ± 4	(14)	$p_0, p_1, \alpha_0, \alpha_{1+2}$	(4.5)	(4.5)	$(\frac{3}{2}, \frac{5}{2})^+$	10.974	(1961CA02, 1962SO01, 1963GO08, 1964ST1E, 1969DI07, 1969SE02, 1969SE03)
3.266 ± 9	35	$p_0, p_1, \alpha_0, \alpha_{1+2}$			$\frac{1}{2}^+$	11.086	(1961CA02, 1962SO01, 1963GO08, 1964ST1E, 1969DI07)
3.386 ± 9	20	$p_0, p_1, \alpha_0, \alpha_{1+2}$			$(\frac{1}{2}^-)$	11.199	(1961CA02, 1962SO01, 1964ST1E, 1969DI07)
3.480 ± 9	25	$p_0, p_1, \alpha_0, \alpha_{1+2}$				11.288	(1961CA02, 1963GO08, 1969DI07)
3.503 ± 9		α_0, α_{1+2}				11.310	(1961CA02, 1963GO08, 1969DI07)
3.67		α_{1+2}				11.47	(1963GO08, 1969DI07)
3.71		p_1, α_0				11.51	(1963GO08, 1969DI07)
3.75		p_1, α_0				11.54	(1963GO08, 1969DI07)
(3.83)		α_{1+2}				(11.62)	(1969DI07)
3.86	≈ 40	p_1, α_{1+2}				11.65	(1963GO08, 1969DI07)
3.89		$p_1, \alpha_0, \alpha_{1+2}$				11.68	(1963GO08, 1969DI07)
4.00		p_0, α_0				11.78	(1963GO08, 1969DI07)
4.06		$p_1, \alpha_0, \alpha_{1+2}$				11.84	(1963GO08, 1969DI07)
4.11		p_1, α_0				11.88	(1963GO08, 1969DI07)
4.14		p_1, α_0				11.91	(1963GO08, 1969DI07)
4.19		p_1, α_{1+2}				11.96	(1969DI07)
4.28		α_0, α_{1+2}				12.05	(1963GO08, 1969DI07)
4.33		$p_1, \alpha_0, \alpha_{1+2}$				12.09	(1963GO08, 1969DI07)
4.38		$p_1, \alpha_0, \alpha_{1+2}$				12.14	(1963GO08, 1969DI07)
4.48	≈ 80	$p_1, \alpha_0, \alpha_{1+2}$				12.23	(1963GO08, 1969DI07)

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Table 19.14 from (1972AJ02): Energy levels of ^{19}F from $^{18}\text{O}(p, p)^{18}\text{O}$ and $^{18}\text{O}(p, \alpha)^{15}\text{N}$ (continued)

E_p^a (MeV \pm keV)	Γ_{lab} (keV)	Particles out	Γ_p (keV)	Γ_α (keV)	J^π	E_x (MeV)	Refs.		
4.58	15	p_1, α_0			c	12.33	(1963GO08, 1969DI07)		
4.70		p_1, α_0				12.44	(1963GO08, 1969DI07)		
4.78		p_1				12.52	(1969DI07)		
4.83		p_1, α_{1+2}				12.57	(1969DI07)		
4.90		p_1, α_0				12.63	(1963GO08, 1969DI07)		
4.96		$p_1, \alpha_0, \alpha_{1+2}$				12.69	(1963GO08, 1969DI07)		
5.02		α_{1+2}				12.75	(1969DI07)		
5.06		p_1, α_0				12.78	(1963GO08, 1969DI07)		
5.20		p_1, α_{1+2}				12.92	(1969DI07)		
5.35		p_1, α_{1+2}				13.06	(1969DI07)		
5.47		30	α_{1+2}						
5.64			$p_1, \alpha_0, \alpha_{1+2}$				13.17	(1969DI07)	
5.76			α_{1+2}				13.33	(1963GO08, 1969DI07)	
5.90			p_1, α_{1+2}				13.45	(1969DI07)	
6.08			p_1, α_{1+2}				13.58	(1969DI07)	
6.65	p_1, α_{1+2}				13.75	(1969DI07)			
8.85	α_0				14.29	(1969DI07)			
10.5	p_0, p_1, α_0				16.37	(1964ST1D)			
					17.9	(1964ST1D, 1966ST04)			

A: M.R. Wormald and I.F. Wright, private communication.

^a Additional resonances are reported by (1956HI1A, 1960CL02, 1961CA02, 1962SO01, 1963AM1A, 1963GO08, 1964AM1A, 1964KA1B, 1964ST1E). See also (1959AJ76).

^b $T = \frac{3}{2}$ (1969SE02, 1969SE03).

^c $T = \frac{3}{2}$: see (1969DI07). See, however, (1963GO08).

^d $\alpha_1 + \alpha_2$ only.