

Table 19.17 from (1978AJ03): Energy levels of ^{19}F from $^{18}\text{O}(\text{p}, \text{p})^{18}\text{O}$ and $^{18}\text{O}(\text{p}, \alpha)^{15}\text{N}$

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	$\frac{3}{2}^-$	8.5925	A
0.680	100	p_0	5	95	$\frac{1}{2}^+$	8.637	A
0.846 ± 1.5	47 ± 1	p_0, α_0	26 ± 1.5	21 ± 1	$\frac{1}{2}^+; T = \frac{3}{2}$	8.795	A
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	A
(1.135)	140					(9.068)	A
1.1685 ± 0.5	0.60 ± 0.03	p_0, α_0	0.005 ± 0.0006	0.595 ± 0.08	$\frac{7}{2}^+$	9.0999	A
1.2390 ± 1	6.1 ± 0.3	$p_0, (\alpha_0)$	0.40 ± 0.03	5.7 ± 0.4	$\frac{1}{2}^+$	9.167	A
1.4025 ± 1	5.2 ± 0.2	p_0, α_0	0.23 ± 0.02	5.0 ± 0.4	$\frac{1}{2}^+$	9.321	A
1.620 ± 6	30	p_0, α_0			$(\frac{5}{2})$	9.527	A
1.668 ± 6	27	p_0, α_0			$\frac{3}{2}^+$	9.573	A
1.766 ± 3	3.6	p_0, α_0	2.1	1.5	$\frac{3}{2}^+$	9.666	A
1.928 ± 3	0.16	p_0, α_0	0.09	0.07	$(\frac{5}{2}, \frac{7}{2})^-$	9.819	A
2.001 ± 4	31	p_0, α_0	12	19	$\frac{1}{2}^+$	9.888	A
2.2630 ± 0.7	5.0 ± 1.0	$\alpha_0, \alpha_1, \alpha_2$	≈ 5	0.004^c	$\frac{3}{2}^-$	10.136	B
2.289 ± 3	33	p_0, α_0	2.3	(1.0)	$\frac{1}{2}^+$	10.161	A
2.363 ± 3	4.5	p_0, α_0	2.8	1.7	$\frac{1}{2}^+$	10.231	A
2.387 ± 3	24	p_0, α_0	11	13	$\frac{3}{2}^+$	10.253	A
2.443 ± 4	9.7	p_0, α_0	5.2	4.5	$\frac{3}{2}^+$	10.307	A
2.644 ± 3	4.6	$p_0, p_1, \alpha_0, \alpha_{1+2}$	2.4	(1.0)	$\frac{3}{2}^+$	10.497	A
2.705 ± 3	8 ± 2	p_1, α_0			$\frac{3}{2}^+; (T = \frac{3}{2})$	10.555	A
2.732 ± 4	23 ± 3	p_1, α_0			$(\frac{5}{2}^+)$	10.580	A
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	A
2.925 ± 3	5.7	$p_0, p_1, \alpha_0, \alpha_{1+2}$	4.5	1.2	$\frac{1}{2}^-$	10.763	A

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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 (3.06)	19.5	$\text{p}_0, \text{p}_1, \alpha_0, \alpha_{1+2}$ α_0	13.0		$\frac{5}{2}^+$	10.862 (10.89)	A A
3.148 ± 4	(14)	$\text{p}_0, \text{p}_1, \alpha_0, \alpha_{1+2}$	(4.5)	(4.5)	$(\frac{3}{2}, \frac{5}{2})^+$	10.974	A
3.266 ± 9	35	$\text{p}_0, \text{p}_1, \alpha_0, \alpha_{1+2}$			$\frac{1}{2}^+$	11.086	A
3.386 ± 9	20	$\text{p}_0, \text{p}_1, \alpha_0, \alpha_{1+2}$			$(\frac{1}{2}^-)$	11.200	A
3.479 ± 8	23 ± 5	$\text{p}_0, \text{p}_1, \alpha_0, \alpha_{1+2}$	4.3 ± 1		$\frac{5}{2}^+$	11.288	A, (1973OR01)
3.547 ± 25	286 ± 33	p_0	241 ± 2		$\frac{1}{2}^+$	11.35	(1973OR01)
3.643 ± 9	40 ± 7	$\text{p}_0, (\alpha_{1+2})$	17 ± 3		$\frac{1}{2}^-$	11.443	A, (1973OR01)
3.694 ± 9	29 ± 6	$\text{p}_0, \text{p}_1, \alpha_0, (\alpha_{1+2})$	12 ± 2		$\frac{3}{2}^-$	11.491	A, (1973OR01)
3.744 ± 8	23 ± 5	$\text{p}_0, \text{p}_1, \alpha_0$	3.7 ± 1		$\frac{5}{2}^+$	11.539	A, (1973OR01)
3.811 ± 12	66 ± 7	p_0	30 ± 12^d		$\frac{3}{2}^-$	11.602	(1973OR01, 1975AL20)
3.869 ± 8 a	28 ± 7	$\text{p}_0, \text{p}_1, (\alpha_{1+2})$	12 ± 2^d		$\frac{3}{2}^+; (T = \frac{3}{2})$	11.657	A, (1973OR01, 1975AL20)
4.290 ± 30	75 ± 25	$\text{p}_0, \alpha_0, \alpha_{1+2}$	10 ± 3		$\frac{1}{2}^-$	12.06	A, (1973OR01, 1975AL20)
4.390 ± 15	110 ± 15	$\text{p}_0, \text{p}_1, (\alpha_0, \alpha_{1+2})$	60 ± 10		$\frac{3}{2}^-; T = \frac{3}{2}$	12.150	A, (1973OR01, 1975AL20)
4.465 ± 12 a	78 ± 1	$\text{p}_0, \text{p}_1, \alpha_0, \alpha_{1+2}$	48 ± 6^d		$\frac{3}{2}^+$	12.221	A, (1973OR01, 1975AL20)
4.782 ± 7	16 ± 4	p_0, p_1	2.4 ± 1		$\frac{1}{2}^-$	12.521	(1969DI07, 1973OR01, 1975AL20)
4.840 ± 10	50 ± 10	$\text{p}_0, \text{p}_1, \alpha_{1+2}$	6.4 ± 2^d		$\frac{5}{2}^+$	12.576	(1973OR01, 1975AL20)
4.848 ± 25 a	300 ± 50	p_0	80 ± 25		$\frac{1}{2}^-; T = \frac{3}{2}$	12.58	(1973OR01, 1975AL20)
5.074 ± 30	100 ± 40	$\text{p}_0, \text{p}_1, (\alpha_0)$	13 ± 5		$\frac{5}{2}^+; T = \frac{3}{2}$	12.80	A, (1975AL20)
5.135 ± 30	290 ± 40	p_0, p_1	114 ± 17		$\frac{3}{2}^+; T = \frac{3}{2}$	12.86	(1973OR01, 1975AL20)

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E_p^a (MeV \pm keV)	Γ_{lab} (keV)	Particles out	Γ_p (keV)	Γ_α (keV)	J^π	E_x (MeV)	Refs.
5.225 \pm 25	75 \pm 25	p_0, p_1, α_{1+2}	3 \pm 1.5		$\frac{5}{2}^+$	12.94	(1969DI07, 1973OR01, 1975AL20)
5.27 \pm 50	130 \pm 40	p_0	20 \pm 8		$\frac{1}{2}^-$	12.98	(1975AL20)
5.38 \pm 75	300 \pm 75	p_0	75 \pm 25		$\frac{3}{2}^-$	13.09	(1975AL20)
5.622 \pm 8	30 \pm 6	$p_0, p_1, \alpha_0, \alpha_{1+2}$	10 \pm 3		$\frac{7}{2}^-$	13.317	(1969DI07, 1973OR01, 1975AL20)
5.670 \pm 25	40 \pm 20	p_0	2 \pm 2		$\frac{3}{2}^-$	13.36	(1975AL20)
a							
6.060 \pm 11	55 \pm 10	$p_0, p_1, (\alpha_{1+2})$	13 \pm 3		$\frac{7}{2}^-; T = \frac{3}{2}$	13.731	(1969DI07, 1973OR01, 1975AL20)
6.65		p_1, α_{1+2}				14.29	(1969DI07)
10.5		p_0, p_1, α_0				17.9	(1966ST04)

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A: See references listed for this state in [Table 19.14 in \(1972AJ02\)](#).

B: ([1972WO15](#)) and private communication.

^a For other reported resonances see [Table 19.14 in \(1972AJ02\)](#).

^b Probable analog of $^{19}\text{O}^*(3.15)$: isospin impurities may be present ([1969SE02](#), [1969SE03](#)).

^c $\alpha_0 + \alpha_2$ only.

^d See also ([1975AL20](#)).