

Table 19.7 from (1972AJ02): Resonances in  $^{15}\text{N}(\alpha, \gamma)^{19}\text{F}$  <sup>a</sup>

$E_\alpha$ (MeV $\pm$ keV)	$\Gamma$ (keV)	$\frac{1}{2}(2J+1)\Gamma_\gamma\Gamma_\alpha/\Gamma$ (eV)	$J^\pi$ <sup>c</sup>	$E_x$ (MeV)	Refs.
0.850 $\pm$ 1	$(43.8 \pm 8.5) \times 10^{-6}$	$(6 \pm 1) \times 10^{-3}$ <sup>b</sup>	$\frac{5}{2}^-$	4.684	(1970AI01, 1972RO01)
1.385 $\pm$ 3		$(13 \pm 8) \times 10^{-3}$ <sup>b</sup>	$\frac{5}{2}^+$	5.106	(1970AI01)
1.681 $\pm$ 5	< 2	$1.64 \pm 0.16$	$\frac{1}{2}^-$	5.340	(1957PR1A, 1970AI01, 1971DI09)
1.790		$0.42 \pm 0.09$ <sup>b</sup>	$\frac{7}{2}^-$	5.426	(1970AI01)
1.839 $\pm$ 2	< 1	$2.5 \pm 0.4$ <sup>b</sup>	$\frac{7}{2}^+$	5.464	(1957PR1A, 1971DI18)
1.883 $\pm$ 3	4 $\pm$ 1	$4.2 \pm 1.1$ <sup>b</sup>	$\frac{3}{2}^+$	5.499	(1957PR1A)
1.930		$0.48 \pm 0.11$ <sup>b</sup>	$\frac{5}{2}^+$	5.54	(1970AI01)
2.05				5.63	(1970AI01)
2.44			$\frac{1}{2}^-$	5.94	A, (1970AI01)
2.61			$(\frac{7}{2}^+)$	6.07	A, (1970AI01)
2.64			$(\frac{3}{2}^-)$	6.10	A, (1970AI01)
2.74			$\frac{7}{2}^-$	6.18	A, (1970AI01)
2.88			$\frac{5}{2}^+$	6.29	(1970AI01)
2.95			$\frac{7}{2}^+$	6.34	(1970AI01)
3.147 $\pm$ 1.5		$1.7 \pm 0.3$	$\frac{3}{2}^+$	6.497	B, (1970AI01)
3.150 $\pm$ 1.5		$2.3 \pm 0.4$	$\frac{11}{2}^+$	6.499	B, (1969AI01, 1970AI01)
3.183 $\pm$ 1.5		$2.35 \pm 0.35$	$\frac{3}{2}^+$	6.525	B
3.218 $\pm$ 1.5		$0.57 \pm 0.12$	$\frac{7}{2}^-$	6.553	B
3.268 $\pm$ 1.5		$1.64 \pm 0.25$	$\frac{9}{2}^+$	6.592	B, (1971DI18)
3.515 $\pm$ 3		$10.9 \pm 1.5$	$\frac{3}{2}^-$	6.787	B
3.58 $\pm$ 5				6.838	B
3.691 $\pm$ 3		$9.7 \pm 1.4$	$\frac{7}{2}^-$	6.926	B
3.996 $\pm$ 3		$1.15 \pm 0.23$	$\frac{11}{2}^-$ , $(\frac{7}{2}^-)$	7.167	B
4.11 $\pm$ 5				7.257	B
4.468 $\pm$ 3		$17.0 \pm 2.7$	$\frac{5}{2}^+$ ; $T = \frac{3}{2}$	7.539	A, B, (1969AI02)
4.623 $\pm$ 3		$3.7 \pm 0.9$	$\frac{3}{2}^+$ ; $T = \frac{3}{2}$	7.662	A, B, (1969AI02)
4.75 $\pm$ 5				7.762	B
4.96 $\pm$ 3		$2.3 \pm 0.4$	$\frac{7}{2}^+$ ; $\frac{9}{2}$	7.928	B, (1971DI18)
4.97 $\pm$ 3		$3.1 \pm 0.5$	$\frac{11}{2}^+$	7.935	A, B, (1971DI18)
5.07 $\pm$ 5				8.014	B
d				8.287	C
d				8.942	C

A: D. Rogers, private communication.

B: W.R. Dixon and R.S. Storey, private communication.

C: K. Bharuth-Ram, K.P. Jackson, N.A. Jelley, P.G. Lawson and K.W. Allen, private communication.

<sup>a</sup> See also [Table 19.9](#).

<sup>b</sup> Recalculated by D. Rogers (private communication) on basis of results of (1971DI09) for  $^{19}\text{F}^*(5.34)$ .

<sup>c</sup> See (1970AI01) for tentative assignments to rotational bands.

<sup>d</sup> Resonant energies determined to  $\pm 3$  and  $\pm 6$  keV, respectively.  $^{19}\text{F}^*(8.29)$  decays only to the  $J^\pi = \frac{9}{2}^-$  state at 4.03 MeV and  $\gamma$ -ray angular distribution studies establish  $J = \frac{13}{2}$  or  $\frac{9}{2}$ . The former is favored since no other branches are observed. Of  $J^\pi = \frac{13}{2}^-$ , and with  $\omega\gamma = 1.02 \pm 0.21$  eV, the strength of the transition to  $^{19}\text{F}^*(4.03)$  is  $21.1 \pm 4.3$  W.u.  $^{19}\text{F}^*(8.94)$  is weaker than expected for the  $\frac{11}{2}^-$  member of the  $K^\pi = \frac{1}{2}^-$  band (K.W. Allen, private communication).