

Table 15.20 from (1981AJ01): Resonances in  $^{12}\text{C} + ^3\text{He}$ 

| $E(^3\text{He})$<br>(MeV $\pm$ keV) | Resonant for   | $\Gamma_{\text{c.m.}}$<br>(keV) | $J^\pi$                                  | $E_x$<br>(MeV)     | Refs.         |
|-------------------------------------|--|---------------------------------|--|--------------------|---------------|
| 1.21                                | $p_0, p_2$   |                                 | $(\frac{5}{2})^-$                        | 13.04              | A             |
| 1.3                                 | $p_0 \rightarrow p_3$                                      |                                 |  | 13.1               | A             |
| 2.15                                | $n, p_0$   |                                 | $(> \frac{5}{2})$                        | 13.79              | A             |
| $2.45 \pm 40$                       | $n_0, p_0 \rightarrow p_3$                                 | $160 \pm 20$                    | $(\frac{1}{2}^-, \frac{3}{2}^-)$         | 14.03              | A             |
| $2.75 \pm 40$                       | $n_0, p_1, p_2, ^3\text{He}, \alpha_0$                     | $340 \pm 30$                    | $\frac{1}{2}^+$                          | 14.27              | A             |
| (2.87)                              | $p_0, p_2$   | 240                             |  | (14.37)            | A             |
| $2.990 \pm 10$                      | $n_0, p_0, p_1, p_2, p_4, p_5, p_8, ^3\text{He}, \alpha_0$ | $100 \pm 10$                    | $\frac{3}{2}^+, \frac{5}{2}^+$           | 14.465             | A             |
| $3.28 \pm 40$                       | $p_0, (p_1, p_2)$  | $180 \pm 40$                    |  | 14.70              | A             |
| $3.60 \pm 40$                       | $p_0, p_1, p_2$  | $400 \pm 25$                    |  | 14.95              | A             |
| $4.20 \pm 10$                       | $p_5, p_6, \alpha_0$                                       | $65 \pm 15$                     |  | 15.43              | A             |
| $4.37 \pm 40$                       | $p_0, p_1, p_2, p_4, p_7, p_8, \alpha_0$                   | $80 \pm 25$                     |  | 15.57              | A             |
| $4.65 \pm 50$                       | $n_0$  |                                 |  | 15.79              | A             |
| $4.78 \pm 50$                       | $^3\text{He}, \alpha_0$                                    | 350                             | $\frac{1}{2}^-, \frac{3}{2}^-$           | 15.90              | A             |
| $4.97 \pm 20$                       | $\alpha_0$   |                                 |  | 16.05              | A             |
| $5.03 \pm 20$                       | $n_0, ^3\text{He}, \alpha_0$                               |                                 |  | 16.10              | A             |
| $5.15 \pm 20$                       | $n_0, ^3\text{He}, \alpha_0$                               |                                 |  | 16.19              | A             |
| $5.45 \pm 50$                       | $^3\text{He}, \alpha_0$                                    | 170                             | $\frac{1}{2}^+$                          | 16.43              | A             |
| $5.85 \pm 50$                       | $n_0, ^3\text{He}$   |                                 |  | 16.75              | A             |
| $6.23 \pm 70$                       | $\gamma_0$   | $700 \pm 70$                    | a  | $17.05 \pm 0.06^b$ | (1978DE33)    |
| $6.80 \pm 50$                       | $n_0, ^3\text{He}, \alpha_0$                               | 600                             | $\frac{1}{2}^-, \frac{3}{2}^-$           | 17.51              | A             |
| $7.40 \pm 50$                       | $^3\text{He}$  | 200                             | $\frac{1}{2}^-, \frac{3}{2}^-$           | 17.99              | A             |
| $7.70 \pm 50$                       | $n_0, p_0$   |                                 |  | 18.23              | A             |
| $8.25 \pm 70$                       | $\gamma_0$   | $520 \pm 110$                   | $(\frac{1}{2}, \frac{3}{2})^+ \text{ A}$ | $18.65 \pm 0.06^b$ | (1978DE33)    |
| $8.70 \pm 50$                       | $n_0$  |                                 |  | 19.03              | A             |
| $9.38 \pm 100$                      | $\gamma_0$   | $780 \pm 270$                   | a  | $19.55 \pm 0.08$   | (1978DE33)    |
| $9.80 \pm 50$                       | $n_0$  |                                 |  | 19.91              | A             |
| $10.45 \pm 90$                      | $\gamma_0, (p_0)$  | $970 \pm 240$                   | a  | $20.40 \pm 0.07$   | A, (1978DE33) |
| $11.87 \pm 80$                      | $\gamma_0$   | $730 \pm 120$                   | a  | $21.61 \pm 0.07$   | (1978DE33)    |
| (17.0) <sup>c</sup>                 | $^3\text{He}$  | $\approx 600$                   | $(\frac{13}{2}^-)$                       | (26.0)             | A             |
| (20.0) <sup>c</sup>                 | $^3\text{He}$  | $\approx 2500$                  | $(\frac{9}{2}^-, \frac{11}{2}^-)$        | (28.0)             | A             |
| (21.5)                              | $^3\text{He}$ to $^{12}\text{C}^*(15.1)$                   | $\approx 2500$                  |  | (29.0)             | A             |

A: See references listed for this state in Table 15.21 (1976AJ01).

<sup>a</sup> See text.

<sup>b</sup>  $\Gamma_{^3\text{He}}/\Gamma_p = 0.17 \pm 0.07$  and  $0.09 \pm 0.04$  for  $^{15}\text{O}^*(17.04, 18.65)$ .

<sup>c</sup>  $\Gamma_p = 0.06$  and  $\geq 0.1$  MeV for  $^{15}\text{O}^*(26, 28)$  (1972MC01).