Table 2 from (1993TI07): Electromagnetic transitions in $A = 16 - 17$ [a]

Nucleus	$E_{\rm xi} \to E_{\rm xf}$ (MeV)	$J^\pi_{\rm i}(T_{\rm i}) \to J^\pi_{\rm f}(T_{\rm f})$	Γ_γ (eV)	Branching ratio (%)	Mult.	S (W.u.)
^{16}N [b]	$0.12 \to 0$	$0^-(1) \to 2^-(1)$	$(8.7 \pm 0.1) \times 10^{-11}$	100	E2	1.7 ± 0.1
	$0.30 \to 0$	$3^- \to 2^-$	$(5.00 \pm 0.08) \times 10^{-6}$	100	M1	$(9.00 \pm 0.15) \times 10^{-3}$
	$0.40 \to 0$	$1^- \to 2^-$	$(3.1 \pm 0.1) \times 10^{-5}$	26.6 ± 0.6	M1	$(2.36 \pm 0.08) \times 10^{-2}$
	$\to 0.12$	$\to 0^-$	$(8.6 \pm 0.2) \times 10^{-5}$	73.4 ± 1.6	M1	0.193 ± 0.004
^{16}O [c]	$6.13 \to 0$	$3^-(0) \to 0^+(0)$	$(2.60 \pm 0.13) \times 10^{-5}$	100	E3	13.5 ± 0.7
	$6.92 \to 0$	$2^+ \to 0^+$	0.097 ± 0.003	> 99	E2	3.1 ± 0.1
	$\to 6.05$	$\to 0^+$	$(2.7 \pm 0.3) \times 10^{-5}$	$(2.7 \pm 0.3) \times 10^{-2}$	E2	27 ± 3
	$\to 6.13$	$\to 3^-$	$\leq 9 \times 10^{-6}$	$\leq 8 \times 10^{-3}$	E1	$\leq 4 \times 10^{-5}$
	$7.12 \to 0$	$1^- \to 0^+$	$(5.5 \pm 0.3) \times 10^{-2}$	> 99	E1	$(3.5 \pm 0.2) \times 10^{-4}$
	$\to 6.05$	$\to 0^+$	$< 3 \times 10^{-7}$	$\leq 6 \times 10^{-4}$	E1	$< 6 \times 10^{-7}$
	$\to 6.13$	$\to 3^-$	$(4 \pm 1) \times 10^{-5}$	$(7.0 \pm 1.4) \times 10^{-2}$	E2	21 ± 5
	$8.87 \to 0$	$2^- \to 0^+$	$(2.6 \pm 0.4) \times 10^{-4}$	7.2 ± 0.8	M2	0.050 ± 0.008
	$\to 6.05$	$\to 0^+$	$(3.1 \pm 1.0) \times 10^{-6}$	0.122 ± 0.033	M2	0.18 ± 0.06
	$\to 6.13$	$\to 3^-$	$(3.0 \pm 0.4) \times 10^{-4}$	77.7 ± 1.6	M1	$(6.9 \pm 0.9) \times 10^{-4}$
			$(2.5 \pm 0.2) \times 10^{-3}$		E2	8.2 ± 0.7
	$\to 6.92$	$\to 2^+$	$(1.5 \pm 0.3) \times 10^{-4}$	3.6 ± 0.5	E1	$(4.7 \pm 0.9) \times 10^{-5}$
	$\to 7.12$	$\to 1^-$	$(8 \pm 3) \times 10^{-5}$	11.4 ± 0.5	M1	$(7.1 \pm 2.6) \times 10^{-4}$
			$(3.4 \pm 0.5) \times 10^{-4}$		E2	10.3 ± 1.5
	$9.59 \to 0$	$1^- \to 0^+$	$(2.5 \pm 0.4) \times 10^{-2}$		E1	$(6.6 \pm 1.1) \times 10^{-5}$
	$\to 6.92$	$1^- \to 2^+$	$(2.9 \pm 1.0) \times 10^{-3}$		E1	$(3.5 \pm 1.2) \times 10^{-4}$
	$9.84 \to 0$	$2^+ \to 0^+$	$(5.7 \pm 0.6) \times 10^{-3}$	61 ± 4	E2	0.031 ± 0.003
	$\to 6.05$	$\to 0^+$	$(1.9 \pm 0.4) \times 10^{-3}$	18 ± 4	E2	1.2 ± 0.3
	$\to 6.92$	$\to 2^+$	$(2.2 \pm 0.4) \times 10^{-3}$	21 ± 4	M1	$(4.2 \pm 0.8) \times 10^{-3}$
	$10.36 \to 0$	$4^+ \to 0^+$	$(5.6 \pm 2.0) \times 10^{-8}$		E4	3.7 ± 1.3
	$\to 6.13$	$\to 3^-$	$< 1 \times 10^{-3}$		E1	$< 3 \times 10^{-5}$
	$\to 6.92$	$\to 2^+$	$(6.2 \pm 0.6) \times 10^{-2}$	≈ 100	E2	65 ± 6
	$10.96 \to 7.12$	$0^- \to 1^-$	$(8 \pm 5) \times 10^{-2}$	> 99	M1	$(7 \pm 4) \times 10^{-2}$
	$11.10 \to 6.13$	$4^+ \to 3^-$	$(3.1 \pm 1.3) \times 10^{-3}$		E1	$(5.9 \pm 2.5) \times 10^{-5}$
	$\to 6.92$	$\to 2^+$	$(2.5 \pm 0.6) \times 10^{-3}$		E2	1.0 ± 0.3
	$11.52 \to 0$	$2^+ \to 0^+$	0.61 ± 0.02	91.7	E2	1.5 ± 0.5
	$\to 6.05$	$\to 0^+$	$(3.0 \pm 0.5) \times 10^{-2}$	4.2 ± 0.7	E2	3.1 ± 0.5
	$\to 6.92$	$\to 2^+$	$(2.9 \pm 0.7) \times 10^{-2}$	4.0 ± 1.0	M1	0.014 ± 0.004
	$\to 7.12$	$\to 1^-$	$\leq 5 \times 10^{-3}$	≤ 0.8	E1	$\leq 1 \times 10^{-4}$
	$12.44 \to 0$	$1^- \to 0^+$	12 ± 2	≈ 100	E1	0.014 ± 0.002
	$\to 6.05$	$\to 0^+$	0.12 ± 0.04	1.2 ± 0.4	E1	$(1.1 \pm 0.4) \times 10^{-3}$
	$12.53 \to 0$	$2^- \to 0^+$	$(3.3 \pm 0.5) \times 10^{-2}$		M2	1.12 ± 0.17
	$\to 6.13$	$\to 3^-$	2.1 ± 0.2	60 ± 6	M1	0.38 ± 0.04

Table 2 from (1993TI07): Electromagnetic transitions in $A = 16 - 17$ [a] (continued)

Nucleus	$E_{\rm xi} \to E_{\rm xf}$ (MeV)	$J^\pi_{\rm i}(T_{\rm i}) \to J^\pi_{\rm f}(T_{\rm f})$	Γ_γ (eV)	Branching ratio (%)	Mult.	S (W.u.)
	$\to 6.92$	$\to 2^+$	< 0.34	< 10	E1	$< 4.5 \times 10^{-3}$
	$\to 7.12$	$\to 1^-$	0.5 ± 0.1	15 ± 3	M1	0.15 ± 0.03
	$\to 8.87$	$\to 2^-$	0.9 ± 0.1	25 ± 3	M1	0.9 ± 0.1
	$12.80 \to 7.12$	$0^-(1) \to 1^-(0)$	2.5 ± 0.2	≈ 100	M1	0.65 ± 0.06
	$12.97 \to 0$	$2^-(1) \to 0^+(0)$	$(3.4 \pm 0.9) \times 10^{-2}$		M2	0.97 ± 0.26
	$\to 6.13$	$\to 3^-(0)$	2.3 ± 0.2	63 ± 6	M1	0.34 ± 0.03
	$\to 7.12$	$\to 1^-(0)$	0.44 ± 0.10	12 ± 3	M1	0.10 ± 0.02
	$\to 8.87$	$\to 2^-(0)$	0.90 ± 0.10	25 ± 3	M1	0.62 ± 0.07
	$13.09 \to 0$	$1^-(1) \to 0^+(0)$	32 ± 5	≈ 100	E1	0.033 ± 0.005
	$\to 6.05$	$\to 0^+(0)$	0.26 ± 0.09	0.58 ± 0.12	E1	$(1.7 \pm 0.6) \times 10^{-3}$
	$\to 7.12$	$\to 1^-(0)$	1.4 ± 0.4	3.1 ± 0.8	M1	0.31 ± 0.09
^{17}N [d]	$1.37 \to 0$	$\frac{3}{2}^-(\frac{3}{2}) \to \frac{1}{2}^-(\frac{3}{2})$	$(7 \pm 3) \times 10^{-3}$	100	M1	0.13 ± 0.06
	$1.85 \to 0$	$\frac{1}{2}^+ \to \frac{1}{2}^-$	$(1.4^{+0.7}_{-0.3}) \times 10^{-5}$	86.5 ± 2.5	E1	$(5.0^{+2.5}_{-1.0}) \times 10^{-6}$
	$\to 1.37$	$\to \frac{3}{2}^-$	$(2.2^{+1.1}_{-0.5}) \times 10^{-6}$	13.5 ± 2.5	E1	$(4.4^{+2.2}_{-1.0}) \times 10^{-5}$
	$1.91 \to 0$	$\frac{5}{2}^- \to \frac{1}{2}^-$	$(4.6 \pm 0.9) \times 10^{-5}$	77.0 ± 2.5	E2	0.8 ± 0.2
	$\to 1.37$	$\to \frac{3}{2}^-$	$(1.4 \pm 0.3) \times 10^{-5}$	23.0 ± 2.5	M1	$(4.2 \pm 0.9) \times 10^{-3}$
					E2	$(0.4^{+1.3}_{-0.4})$
	$2.53 \to 0$	$\frac{5}{2}^+ \to \frac{1}{2}^-$	$(2.2 \pm 0.3) \times 10^{-6}$	11 ± 1	M2	(0.21 ± 0.03)
	$\to 1.37$	$\to \frac{3}{2}^-$	$(6.9 \pm 1.0) \times 10^{-6}$	34 ± 3	E1	$(9.8 \pm 1.5) \times 10^{-6}$
	$\to 1.85$	$\to \frac{1}{2}^+$	$(2.4 \pm 0.5) \times 10^{-6}$	12.0 ± 1.5	E2	7.7 ± 1.5
	$\to 1.91$	$\to \frac{5}{2}^-$	$(8.4 \pm 1.0) \times 10^{-6}$	41.0 ± 2.5	E1	$(7.8 \pm 0.9) \times 10^{-5}$
	$3.13 \to 1.91$	$\frac{7}{2}^- \to \frac{5}{2}^-$	$(2.4 \pm 0.7) \times 10^{-3}$	100	M1	0.063 ± 0.018
	$3.63 \to 1.91$	$(\frac{7}{2}, \frac{9}{2})^- \to \frac{5}{2}^-$	$(2.6 \pm 0.8) \times 10^{-5}$	47 ± 10	E2	0.8 ± 0.3 [g]
	$\to 3.13$	$\to \frac{7}{2}^-$	$(2.9 \pm 1.0) \times 10^{-5}$	53 ± 10	M1	0.011 ± 0.004 [g]
^{17}O [e]	$0.87 \to 0$	$\frac{1}{2}^+(\frac{1}{2}) \to \frac{5}{2}^+(\frac{1}{2})$	$(2.55 \pm 0.03) \times 10^{-6}$	100	E2	2.39 ± 0.03
	$3.06 \to 0.87$	$\frac{1}{2}^- \to \frac{1}{2}^+$	$(5.5^{+3.7}_{-2.8}) \times 10^{-3}$	100	E1	$(1.2^{+0.8}_{-0.6}) \times 10^{-3}$
	$3.84 \to 0$	$\frac{5}{2}^- \to \frac{5}{2}^+$	> 0.026	100	E1	$> 1 \times 10^{-3}$
	$4.55 \to 0$	$\frac{3}{2}^- \to \frac{5}{2}^+$	1.80 ± 0.35 [i]		E1	$(4.3 \pm 0.9) \times 10^{-2}$
	$\to 0.87$	$\to \frac{1}{2}^+$	1.85 ± 0.35 [i]		E1	$(8.3 \pm 1.5) \times 10^{-2}$
	$11.08 \to 0.87$	$\frac{1}{2}^-(\frac{3}{2}) \to \frac{1}{2}^+(\frac{1}{2})$	10 ± 3 [h]	100	E1	$(4.5 \pm 0.8) \times 10^{-2}$
^{17}F [f]	$0.50 \to 0$	$\frac{1}{2}^+(\frac{1}{2}) \to \frac{5}{2}^+(\frac{1}{2})$	$(1.60 \pm 0.03) \times 10^{-6}$	100	E2	25.0 ± 0.5
	$3.10 \to 0.50$	$\frac{1}{2}^- \to \frac{1}{2}^+$	$(12 \pm 2) \times 10^{-3}$	100	E1	$(1.5 \pm 0.3) \times 10^{-3}$
	$3.86 \to 0$	$\frac{5}{2}^- \to \frac{5}{2}^+$	0.11 ± 0.02	100	E1	$(4.3 \pm 0.8) \times 10^{-3}$
	$11.19 \to 0.50$	$\frac{1}{2}^-(\frac{3}{2}) \to \frac{1}{2}^+(\frac{1}{2})$	6.0 ± 2.5	100	E1	0.011 ± 0.005

[a] See also (1979EN05). The last column gives the γ-ray strengths expressed in Weisskopf units [see (1960WI1A)]. The Weisskopf estimates ($\Gamma_{\rm w}$ in eV, E_γ in MeV) are:

$$\Gamma_{\rm w}({\rm E1}) = 6.8 \times 10^{-2}\ A^{2/3}\ E_\gamma^3, \qquad \Gamma_{\rm w}({\rm E2}) = 4.9 \times 10^{-8}\ A^{4/3}\ E_\gamma^5,$$
$$\Gamma_{\rm w}({\rm E3}) = 2.3 \times 10^{-14}\ A^2\ E_\gamma^7, \qquad \Gamma_{\rm w}({\rm E4}) = 6.8 \times 10^{-21}\ A^{8/3}\ E_\gamma^9,$$
$$\Gamma_{\rm w}({\rm M1}) = 2.1 \times 10^{-2}\ E_\gamma^3, \qquad \Gamma_{\rm w}({\rm M2}) = 1.5 \times 10^{-8}\ A^{2/3}\ E_\gamma^5.$$

The values for these γ-ray strengths are occasionally different from those listed in other tables of this paper because different values of r_0 were used. In this table $r_0 = 1.2$ fm is used consistently. The multipolarities in the next to the last column were used to calculate the $\Gamma_{\rm w}$.

[b] See also Table 16.5.

[c] See also Tables 16.13 and 16.14.

[d] See also Tables 17.2 and 17.4.

[e] See also Tables 17.10 and 17.16.

[f] See also Tables 17.23 and 17.24.

[g] $\frac{9}{2}^-$ assumed for ^{17}N*(3.63).

[h] See footnote [i] of Table 17.16.

[i] (1992IG01).