

Table 16.31 from (1993TI07):  $^{16}\text{F}$  levels from  $^{14}\text{N}(^3\text{He}, \text{n})$ ,  $^{16}\text{O}(\text{p}, \text{n})$ ,  $^{16}\text{O}(^3\text{He}, \text{t})$  and  $^{19}\text{F}(^3\text{He}, ^6\text{He})$  <sup>a</sup>

$^{16}\text{F}^* \text{ b}$ (MeV $\pm$ keV)	$L \text{ b}$	$^{16}\text{F}^* \text{ c}$ (MeV $\pm$ keV)	$J\pi \text{ d}$	$^{16}\text{F}^* \text{ e}$ (MeV $\pm$ keV)	$\Delta I \text{ f}$	$^{16}\text{F}^* \text{ g}$ (MeV $\pm$ keV)	$^{16}\text{F}^* \text{ h}$ (MeV $\pm$ keV)	$\Gamma_{\text{c.m.}} \text{ i}$ (keV)	$J\pi \text{ j}$
0	1	0	(1 <sup>-</sup> )	0		0	0	40 $\pm$ 20	0 <sup>-</sup>
0.192 $\pm$ 15	1	0.190 $\pm$ 20	(0 <sup>-</sup> )	0.197 $\pm$ 12		0.19 $\pm$ 20	0.192 $\pm$ 10	< 40	1 <sup>-</sup>
0.425 $\pm$ 15	3	0.425 $\pm$ 10	( $\geq 2$ )	0.424 $\pm$ 5	1	0.425 $\pm$ 20	0.424	40 $\pm$ 30	2 <sup>-</sup>
0.722 $\pm$ 10	(3)	0.725 $\pm$ 10	( $\geq 2$ )	0.720 $\pm$ 6	3	0.72 $\pm$ 20	0.722 $\pm$ 10	< 15	3 <sup>-</sup>
3.751 $\pm$ 10	0	3.775 $\pm 10^{\text{k}}$	(1)	3.76	0	3.75 $\pm$ 20	3.740 $\pm 15^{\text{n}}$	< 40	1 <sup>+</sup>
3.861 $\pm$ 10	2	3.880 $\pm 10^{\text{k}}$	$\geq 1$			3.86 $\pm$ 20	3.873 $\pm 15^{\text{n}}$	< 20	2 <sup>+</sup>
4.370 $\pm$ 10		4.375 $\pm 10^{\text{k}}$	( $\geq 2$ )	4.37	2	4.37 $\pm$ 20	4.372 <sup>n</sup>	50 $\pm$ 20	3 <sup>+</sup>
4.646 $\pm$ 10	0	4.661 $\pm 10^{\text{k}}$	$\geq 1$	4.65	0	4.66 $\pm$ 20	4.652 $\pm 10^{\text{n}}$	60 $\pm$ 20	1 <sup>+</sup>
						4.71 $\pm 20^{\text{m}}$			
4.973 $\pm$ 10	2	4.97 $\pm 20^{\text{l}}$	$\geq 2$			4.97 $\pm$ 20	5.007 $\pm$ 20	60 $\pm$ 40	(2 <sup>+</sup> )
5.264 $\pm$ 20		5.27 $\pm 20^{\text{l}}$		5.27	1		5.274 $\pm 10^{\text{n}}$		(1 <sup>-</sup> )
5.390 $\pm$ 20	2	5.40 $\pm 20^{\text{l}}$				5.39 $\pm$ 20	5.414 $\pm$ 15		4
5.448 $\pm$ 20		5.45 $\pm 20^{\text{l}}$							
5.528 $\pm$ 20	2	5.52 $\pm 20^{\text{l}}$				5.53 $\pm$ 20	5.521 $\pm$ 15		$\pi = +$
		(5.57 $\pm 20)^{\text{l}}$							
5.840 $\pm$ 40				5.86	3		5.858 $\pm 10^{\text{n}}$		2 <sup>-</sup>
						6.05 $\pm 20^{\text{m}}$			
6.230 $\pm$ 50				6.22	0		6.224 $\pm$ 15		
6.371 $\pm$ 20				6.37	3		6.372 $\pm$ 10		4 <sup>-</sup>
							6.559 $\pm 10^{\text{n}}$		
6.678 $\pm$ 10		6.68 $\pm 20^{\text{l}}$	$\geq 1$			6.68 $\pm$ 20		$\leq 45$	(3 <sup>-</sup> + 1 <sup>-</sup> )
						6.93 $\pm 20^{\text{m}}$			
7.110 $\pm$ 20				$\approx 7.5$	1		7.50 $\pm 30^{\text{n},\text{o}}$	950 $\pm$ 100	2 <sup>-</sup>
7.730 $\pm$ 40				$\approx 9.5$	1		7.90 $\pm$ 15	< 100	
				$\approx 11.5$	1		9.50 $\pm 30^{\text{n},\text{o}}$	1050 $\pm$ 100	1 <sup>-</sup> + (2 <sup>-</sup> )
							9.60 $\pm$ 20	250 $\pm$ 50	
							11.50 $\pm 50^{\text{n},\text{o}}$	1900 $\pm$ 500	1 <sup>-</sup> + (2 <sup>-</sup> )

<sup>a</sup> See also Tables 16.33 in (1971AJ02) and 16.26 in (1982AJ01) for earlier work and for references.

<sup>b</sup>  $^{14}\text{N}(^3\text{He}, \text{n})^{16}\text{F}$ .

<sup>c</sup>  $^{14}\text{N}(^3\text{He}, \text{np})^{15}\text{O}$ .

<sup>d</sup> From angular correlation studies.

<sup>e</sup>  $^{16}\text{O}(\text{p}, \text{n})^{16}\text{F}$ .  $E_x$  shown without uncertainties are from Table 16.30.

<sup>f</sup> (1982FA06;  $E_p = 99.1$  and  $135.2$  MeV).

<sup>g</sup>  $^{16}\text{O}(^3\text{He}, \text{t})$  and  $^{19}\text{F}(^3\text{He}, ^6\text{He})^{16}\text{F}$ .

<sup>h</sup>  $^{16}\text{O}(^3\text{He}, \text{t})$ : (1984ST10;  $E(^3\text{He}) = 81$  MeV). See (1986AJ04).

<sup>i</sup> From (a) and (1984ST10, 1985HA01).

<sup>j</sup> From (a) and (1984ST10).

<sup>k</sup> See also (1985HA01).

<sup>l</sup> (1985HA01).

<sup>m</sup> Observed only in  $^{19}\text{F}(^3\text{He}, ^6\text{He})$ .

<sup>n</sup> Decays to  $^{15}\text{O}_{\text{g.s.}}$  by proton emission (1984ST10).

<sup>o</sup> Decays to  $^{15}\text{O}^*(6.18)$  (1984ST10).