

Table 16.8 from (1977AJ02): Levels of  $^{15}\text{N}(\text{d}, \text{p})^{16}\text{N}$  and  $^{18}\text{O}(\text{d}, \alpha)^{16}\text{N}$

(1966HE10) <sup>a</sup> $E_x$ (MeV $\pm$ keV)	$l_n$ <sup>a,b</sup>	(1966HE10) <sup>c</sup>	(1970BO08) <sup>c</sup>	$J\pi$ <sup>d</sup>
0	k	0		$2^-$
$0.1201 \pm 0.5^e$	k	$0.119 \pm 15$		$0^-$
$0.2962 \pm 1.0^e$	k	$0.301 \pm 15$		$3^-$
$0.3973 \pm 1.0^e$	k	$0.400 \pm 15$		$1^-$
$3.365 \pm 10$		$3.358 \pm 15$		$(1^+)$
$3.523 \pm 10$	2 or 1 + 3	$3.524 \pm 15$	f	
$3.964 \pm 10$	3	$3.964 \pm 15$		$(2, 3)^+$
$4.325 \pm 10$	1	$4.324 \pm 15$		$(1)^+$
$4.40^b$	0	$4.383 \pm 15$		$(0, 1)^-$
$4.715 \pm 10$	1			$(1, 2, 3)^+$
$4.780 \pm 10$		$4.787 \pm 15$	f	
$(4.90 \pm 10)$				
$5.032 \pm 10$	2	$5.065 \pm 15$		$(1, 2)^-$
$5.128 \pm 10$	$\geq 2$			$\geq 2$
		$5.139 \pm 15$		
$5.150 \pm 10$	2			$(2, 3)^-$
$5.231 \pm 10$	3	$5.240 \pm 15$		$(2, 3, 4)^+$
$5.310 \pm 10$				
$5.523 \pm 10$	3	$5.528 \pm 15$	f	$(2, 3, 4)^+$
$5.739 \pm 10$	2	$5.740 \pm 15$	f	$(1, 2)^-$
			$6.01 \pm 15^j$	
$6.170 \pm 10$	$\geq 3$	$6.168 \pm 15$	g	$\geq 2$
$(6.28 \pm 10)$	1			$(0, 1, 2)^+$
$6.376 \pm 10$	2		$6.37 \pm 15^j$	$(1, 2, 3)^-$
$6.431 \pm 10$				
$6.514 \pm 10$	1	$6.512 \pm 15$	g	$(0, 1, 2)^+$
$6.609 \pm 10$		$6.620 \pm 15$	g	
$(6.79 \pm 10)$				
$6.847 \pm 10$		$6.852 \pm 15$	g	
$7.034 \pm 10$			$7.01 \pm 15^j$	

Table 16.8 from (1977AJ02): Levels of  $^{15}\text{N}(\text{d}, \text{p})^{16}\text{N}$  and  $^{18}\text{O}(\text{d}, \alpha)^{16}\text{N}$  (continued)

(1966HE10) <sup>a</sup> $E_x$ (MeV $\pm$ keV)	$l_n$ <sup>a,b</sup>	(1966HE10) <sup>c</sup>	(1970BO08) <sup>c</sup>	$J\pi$ <sup>d</sup>
7.135 $\pm$ 10		7.141 $\pm$ 15	g	
7.250 $\pm$ 10		7.247 $\pm$ 15	g	
7.577 $\pm$ 10		7.596 $\pm$ 15	g	
7.638 $\pm$ 10			7.64 $\pm$ 15 <sup>j</sup>	
7.676 $\pm$ 10		7.683 $\pm$ 15		
7.840 $\pm$ 10			7.88 $\pm$ 15 <sup>j</sup>	
			8.06 $\pm$ 15 <sup>j</sup>	
			8.18 $\pm$ 15 <sup>j</sup>	
		8.286 $\pm$ 15	g	
		8.374 $\pm$ 15	g	
			8.49 $\pm$ 30 <sup>h</sup>	
			8.819 $\pm$ 15 <sup>i</sup>	
			9.035 $\pm$ 15	
			(9.16 $\pm$ 30)	
			(9.34 $\pm$ 30)	
			9.459 $\pm$ 15	
			(9.66 $\pm$ 40)	
			9.794 $\pm$ 15 <sup>i</sup>	
			9.90 $\pm$ 30	
			10.055 $\pm$ 15 <sup>i</sup>	
			(10.17 $\pm$ 30)	
			(10.26 $\pm$ 30)	

- <sup>a</sup>  $^{15}\text{N}(\text{d}, \text{p})^{16}\text{N}$ .
- <sup>b</sup> (1971FU14, 1972FU16;  $E_{\text{d}} = 12 \text{ MeV}$ ). I am very much indebted to Dr. H. Fuchs for his comments.
- <sup>c</sup>  $^{18}\text{O}(\text{d}, \alpha)^{16}\text{N}$ .
- <sup>d</sup>  $J^{\pi}$  assignment from angular distribution analyses and  $\gamma$ -decay (1956ZI1A, 1957WA01, 1970BO08, 1972BO49, 1972FU16).
- <sup>e</sup> From  $\gamma$ -decay studies (1963GI11). (1957FR56, 1957WI1B) found  $E_{\text{x}} = 120 \pm 1, 294 \pm 5$  and  $392 \pm 3 \text{ keV}$ .
- <sup>f</sup> Angular distribution reported in  $^{18}\text{O}(\text{d}, \alpha)^{16}\text{N}$  at  $E_{\text{d}} = 10.0 - 11.2 \text{ MeV}$  but  $L$  not determined (1970BO08).
- <sup>g</sup> Alpha group seen but  $E_{\text{x}}$  not determined.
- <sup>h</sup>  $\Gamma$  for this level and the ones listed below  $\leq 40 - 50 \text{ keV}$  (1970BO08).
- <sup>i</sup> These levels appear to be correlated with thresholds for neutron emission to excited states of  $^{15}\text{N}$  (1970BO08, 1970BO09).
- <sup>j</sup> T.I. Bonner, private communication.
- <sup>k</sup> Absolute spectroscopic factors for  $^{16}\text{N}^*(0, 0.12, 0.30, 0.40)$  are 0.55, 0.46, 0.54, 0.52 (1972BO49: average values in the range  $E_{\text{d}} = 5$  to  $6 \text{ MeV}$ ).
- <sup>l</sup> (1975FO02) suggest  $J^{\pi} = 1^{-}$  or  $2$  on the basis of a study at  $E_{\text{d}} = 12 \text{ MeV}$  and comparison with the  $^{15}\text{N}(\text{n}, \text{n})$  results.