Table 16.10 from (1993TI07): Resonances in ^{15}N(n, n)^{15}N [a, b]

E_n (MeV ± keV)	Γ_{lab} (keV)	E_x (MeV)	J^π
0.921	14	3.354	1^+ [c]
1.095	3	3.517	1
1.563	≤ 2	3.955	1
1.944	29	4.312	1^+ [d]
2.038	56	4.400	1^- [d]
2.30 ± 70 [e]	410 ± 100 [e]	4.65	1^- [d]
2.399	107	4.738	2^+ [d]
2.732	35	5.050	1^-
2.830	12	5.142	$3^{(-)}$
2.84 ± 70 [f]	70 ± 100 [f]	5.15	2^- [d]
2.915	4	5.222	≥ 2
2.93	260	5.24	1^+
3.225		5.512	
3.454	24	5.727	1^+
3.69	297	5.95	1^-
3.987	88	6.226	(1^+)
4.126	78	6.356	(3^-)
4.252	113	6.474	(2^+)
4.64	> 150	6.84	≥ 2
4.80	37	6.99	≥ 1
5.055	25	7.227	≥ 2
5.43	30	7.58	≥ 3
5.56		7.70	
5.73	165	7.86	≥ 4
5.90		8.02	
6.28		8.37	≥ 1
6.42		8.51	≥ 1
6.65	45	8.72	≥ 1
6.76		8.82	
7.10	110	9.14	≥ 2
7.31		9.34	

Table 16.10 from (1993TI07): Resonances in ^{15}N(n, n)^{15}N [a, b] (continued)

E_n (MeV ± keV)	Γ_{lab} (keV)	E_x (MeV)	J^π
7.44	105	9.46	≥ 2
7.71	150	9.71	≥ 2
8.07	30	10.05	≥ 3
8.30	175	10.27	≥ 2
8.77	130	10.71	≥ 2
9.61		11.49	≥ 3
9.77		11.64	≥ 3
10.25		12.09	
10.64		12.46	
11.09		12.88	
11.41		13.12	
12.10		13.83	

[a] For references see Table 16.7 in (1977AJ02).

[b] Below $E_n = 4.5$ MeV, the multilevel R-matrix formalism was used to determine E_λ, Γ_λ and whenever possible J^π by a χ^2 fitting and minimization technique. Above this energy the $2J+1$ dependence was used; the parity cannot be determined because no marked interference effects are observed between resonance and potential scattering. Above 5.65 MeV all J-values are lower limits because the inelastic channel is open. [A channel radius $a = 4.69$ fm was used.]

[c] Parity determined from angular distribution.

[d] J^π also obtained by phase-shift analysis.

[e] The phase-shift analysis indicates that the resonance is at $E_n = 2.42 \pm 0.08$ MeV with $\Gamma = 250 \pm 50$ keV. This is one of two $(d_{3/2}p^{-1}_{1/2})$ single-particle resonances.

[f] The phase-shift analysis finds $E_\lambda = 2.94 \pm 0.1$ MeV, $\Gamma = 320 \pm 80$ keV. This is the other $(d_{3/2}p^{-1}_{1/2})$ single-particle resonance.