

$^{12}\text{C}(^{14}\text{N,p}\gamma),(^{15}\text{N,p}_n)$ 1988He15,1991Ti02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	R. B. Firestone	NDS 110, 1691 (2009)	1-Feb-2008

1988He15: $^{12}\text{C}(^{14}\text{N,p})$ E=23.5 MeV. Measured $E\gamma$, $I\gamma$, $p\gamma(\theta)$. E Δ E Si telescope, Ge(Li) detectors.

1991Ti02: $^{12}\text{C}(^{15}\text{N,pn})$ E=1.2-1.8 MeV. Measured DSA. Ge(Li), HPGe detectors.

Other references: 1987He26, 1974O106, 1972Vo02.

 ^{25}Mg Levels

E(level) [‡]	J ^π [†]	T _{1/2} [#]	Comments
0 [@]	5/2 ⁺		
585 ^{&}	1/2 ⁺	2.8 ns 7	T _{1/2} : From $^9\text{Be}(^{18}\text{O},2n)$ (1969Ni09).
975 ^{&}	3/2 ⁺	4 ps 3	T _{1/2} : From $^9\text{Be}(^{18}\text{O},2n)$ (1969Ni09).
1612 [@]	7/2 ⁺		
1965 ^{&}	5/2 ⁺	700 fs 55	
2738 ^{&}	(7/2 ⁺)		
2801	3/2 ⁺		
3405.2 [@] 3	9/2 ⁺	6 fs 4	
3414 ^a	(3/2 ⁻)		
3908		6 fs 2	
3967.5 ^a 5	7/2 ⁻	25 fs 5	
4059.9 5	9/2 ⁺	55 fs 4	
4277 ^b			
4711 ^{&}	9/2 ⁺	25 fs 3	
4722	5/2 ⁺ ,3/2 ⁺		
5012	7/2 ⁺		
5251.7 3	11/2 ⁺	15 fs 2	
5460.3 2	13/2 ⁺	1.44 ps 13	
5523.0 ^a 3	(5/2 ⁻)	46 fs 6	
5530.4 [@] 5	11/2 ⁺	6 fs 2	
5747	(3/2,5/2 ⁺)	<7 fs	
5793 ^a	11/2 ⁻ ,7/2 ⁻		
5972	9/2 ⁺		
6033.4 13	11/2 ⁺	<6 fs	
6362 4			
6435 2			
6842 2			
6862.2 12		<9 fs	
6911 3			
6958 2			
7184 2			
7225 3			
7287 3			
7493 2			
7501 3			
7526 3			
7550 [@] 1	(9/2,13/2) ⁺		
7653 3			
7685 3			
7791.0 15		<7 fs	
7866 2			
8016 2		37 fs 4	
8074 3			

Continued on next page (footnotes at end of table)

$^{12}\text{C}(^{14}\text{N,p}\gamma),(^{15}\text{N,p}_n)$ **1988He15,1991Ti02 (continued)** ^{25}Mg Levels (continued)

$E(\text{level})^{\ddagger}$	$T_{1/2}^{\#}$	$E(\text{level})^{\ddagger}$	$J^{\pi\dagger}$	$E(\text{level})^{\ddagger}$
8264 5		9650 3		11361 3
8534 2		9685 2		11410 3
8550 2		9949 2	(15/2 ⁺)	11460 3
8818.5 7		10137 4		11486 6
8895 1		10653 [@] 2	(15/2 ⁺)	13143 4
8999.5 15	<9 fs	11004 3		13332 10

[†] From Adopted Levels.

[‡] From 1988He15 if rounded to nearest keV. Otherwise from 1991Ti02. Agreement between 1988He15 and 1991Ti02 for levels >6800 keV is poor.

[#] From 1991Ti02.

[@] Band(A): 5/2[202].

[&] Band(B): 1/2[211].

^a Band(C): 1/2[330].

^b Band(D): 1/2[300].

 $\gamma(^{25}\text{Mg})$

E_{γ}	I_{γ}	$E_i(\text{level})$	J_i^{π}	E_f	J_f^{π}	Mult.	δ	Comments
990	25 3	1965	5/2 ⁺	975	3/2 ⁺	M1+E2	-0.25 17	
1191	22 4	5251.7	11/2 ⁺	4059.9	9/2 ⁺	M1(+E2)	-0.052 58	
1380	50 3	1965	5/2 ⁺	585	1/2 ⁺	E2		
1423 2	21 7	6435		5012	7/2 ⁺			
1521 2	4 2	7493		5972	9/2 ⁺			
1612	100	1612	7/2 ⁺	0	5/2 ⁺	M1+E2	-0.18 7	
1724 2	17 7	6435		4711	9/2 ⁺			
1793	75 3	3405.2	9/2 ⁺	1612	7/2 ⁺	M1+E2	-0.12 2	
1822	26 4	5793	11/2 ⁻ , 7/2 ⁻	3967.5	7/2 ⁻	E2		
1830 2	3 2	6842		5012	7/2 ⁺			
1846	19 3	5251.7	11/2 ⁺	3405.2	9/2 ⁺	M1+E2	+0.14 9	
1912	27 6	5972	9/2 ⁺	4059.9	9/2 ⁺	M1(+E2)	+0.27 54	
1965	25 3	1965	5/2 ⁺	0	5/2 ⁺	M1+E2	-0.58 7	
2017 1	18 5	7550	(9/2,13/2) ⁺	5530.4	11/2 ⁺			
2031 2	28 4	7493		5460.3	13/2 ⁺			
2055	100	5460.3	13/2 ⁺	3405.2	9/2 ⁺	E2		
2088 1	9 3	7550	(9/2,13/2) ⁺	5460.3	13/2 ⁺			
2125	71 4	5530.4	11/2 ⁺	3405.2	9/2 ⁺	M1+E2	-0.12 6	
2216	[†]	2801	3/2 ⁺	585	1/2 ⁺	M1+E2	+0.21 9	
2299 1	50 7	7550	(9/2,13/2) ⁺	5251.7	11/2 ⁺	M1+E2	-0.23 4	δ : Assuming $J^{\pi}=5/2^+$.
2333 2	17 7	7866		5530.4	11/2 ⁺			
2375 2	7 4	6435		4059.9	9/2 ⁺			
2388	74 4	5793	11/2 ⁻ , 7/2 ⁻	3405.2	9/2 ⁺	E1+M2	-0.18 6	δ : Assuming $J^{\pi}=11/2^-$.
2399 2	51 8	9949	(15/2 ⁺)	7550	(9/2,13/2) ⁺	M1+E2	-0.16 4	
2448	45 4	4059.9	9/2 ⁺	1612	7/2 ⁺	M1+E2	-0.53 12	
2513	12 4	5251.7	11/2 ⁺	2738	(7/2 ⁺)			
2527 2	14 4	6435		3908				
2628	[†]	6033.4	11/2 ⁺	3405.2	9/2 ⁺	M1+E2	-0.31 +15-21	
2746	[†]	4711	9/2 ⁺	1965	5/2 ⁺	E2		
3047	[†]	5012	7/2 ⁺	1965	5/2 ⁺	M1(+E2)	-0.11 11	

Continued on next page (footnotes at end of table)

$^{12}\text{C}(^{14}\text{N,p}\gamma),(^{15}\text{N,p}_n)$ **1988He15,1991Ti02 (continued)** $\gamma(^{25}\text{Mg})$ (continued)

E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	δ	Comments
3102 3	96 6	8895		5793	11/2 ⁻ , 7/2 ⁻	M1+E2	-0.93 -44+33	δ : Assuming $J^\pi=9/2^-$. +0.3 3 for 11/2 or +0.7 3 for 13/2 ⁺ .
3103 2	6 3	10653	(15/2 ⁺)	7550	(9/2,13/2) ⁺			
3306 2	100	8016		4711	9/2 ⁺			
3405	25 3	3405.2	9/2 ⁺	0	5/2 ⁺	E2		
3433 2	68 8	7493		4059.9	9/2 ⁺			
3475 6	>62	11486		8016				
3625 3	100	7685		4059.9	9/2 ⁺			
3639	48 5	5251.7	11/2 ⁺	1612	7/2 ⁺	E2		
3747	100	4722	5/2 ⁺ , 3/2 ⁺	975	3/2 ⁺	M1(+E2)	-0.02 7	δ : Assuming $J^\pi=5/2^+$. $\delta=1.28$ 63 for $J^\pi=3/2^+$.
3749 2	43 15	8999.5		5251.7	11/2 ⁺			
3806 2	21 10	7866		4059.9	9/2 ⁺			
3823 2	24 11	8534		4711	9/2 ⁺			
3860 3	9 3	11410		7550	(9/2,13/2) ⁺			
3918	29 4	5530.4	11/2 ⁺	1612	7/2 ⁺			
4060	55 4	4059.9	9/2 ⁺	0	5/2 ⁺	E2		
4104 2	79 8	6842		2738	(7/2 ⁺)			
4107 3	100	8818.5		4711	9/2 ⁺			
4145 1	23 7	7550	(9/2,13/2) ⁺	3405.2	9/2 ⁺			
4152 2	37 7	9685		5530.4	11/2 ⁺			
4188 3	100	9650		5460.3	13/2 ⁺			
4289 2	57 15	8999.5		4711	9/2 ⁺			
4360	73 6	5972	9/2 ⁺	1612	7/2 ⁺	M1(+E2)	-0.07 10	
4386 2	3 2	7791.0		3405.2	9/2 ⁺			
4461 2	33 16	7866		3405.2	9/2 ⁺			
4487 2	45 9	9949	(15/2 ⁺)	5460.3	13/2 ⁺	M1+E2	+0.5 5	
4490 2	69 13	8550		4059.9	9/2 ⁺			
4604 4	100	10137		5530.4	11/2 ⁺			
4698 2	4 2	9949	(15/2 ⁺)	5251.7	11/2 ⁺			
4763 3	100	7501		2738	(7/2 ⁺)			
4788 3	100	7526		2738	(7/2 ⁺)			
4823 2	41 8	6435		1612	7/2 ⁺			
4835 1	4 3	8895		4059.9	9/2 ⁺			
4915 3	100	7653		2738	(7/2 ⁺)			
5120 2	94 3	10653	(15/2 ⁺)	5530.4	11/2 ⁺			
5128 2	29 13	7866		2738	(7/2 ⁺)			
5129 2	76 11	8534		3405.2	9/2 ⁺			
5219 2	44 16	7184		1965	5/2 ⁺			
5250 2	100	6862.2		1612	7/2 ⁺			
5322 3	46 16	7287		1965	5/2 ⁺			
5542 3	100	11004		5460.3	13/2 ⁺			
5568 3	100	11361		5793	11/2 ⁻ , 7/2 ⁻			
5572 2	56 16	7184		1612	7/2 ⁺			
5747	†	5747	(3/2,5/2 ⁺)	0	5/2 ⁺	M1+E2	-0.62 11	δ : Assuming $J^\pi=5/2^+$. $\delta=-0.19$ 13 for $J^\pi=3/2$.
5948 3	91 3	11410		5460.3	13/2 ⁺			
5998 3	>61	11460		5460.3	13/2 ⁺			
6024 6	<38	11486		5460.3	13/2 ⁺			
6179 2	97 2	7791.0		1612	7/2 ⁺			
6209 3	<39	11460		5251.7	11/2 ⁺			
6280 2	63 7	9685		3405.2	9/2 ⁺			
6362 4	100	6362		0	5/2 ⁺			
6462 3	100	8074		1612	7/2 ⁺			
6652 5	100	8264		1612	7/2 ⁺			

Continued on next page (footnotes at end of table)

$^{12}\text{C}(^{14}\text{N},\text{p}\gamma),(^{15}\text{N},\text{P}_n)$ **1988He15,1991Ti02** (continued) $\gamma(^{25}\text{Mg})$ (continued)

E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	E_γ	I_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	
6842	2	18	10	6842		7225	3	100	7225	0	5/2 ⁺	
6911	3	100	6911			7287	3	54	16	7287	0	5/2 ⁺
6938	2	31	13	8550		7350	4	100	13143	5793	11/2 ⁻ , 7/2 ⁻	
6958	2	100	6958	1612	7/2 ⁺	7870	10	100	13332	5460.3	13/2 ⁺	
				0	5/2 ⁺							

† Weaker branches not observed.

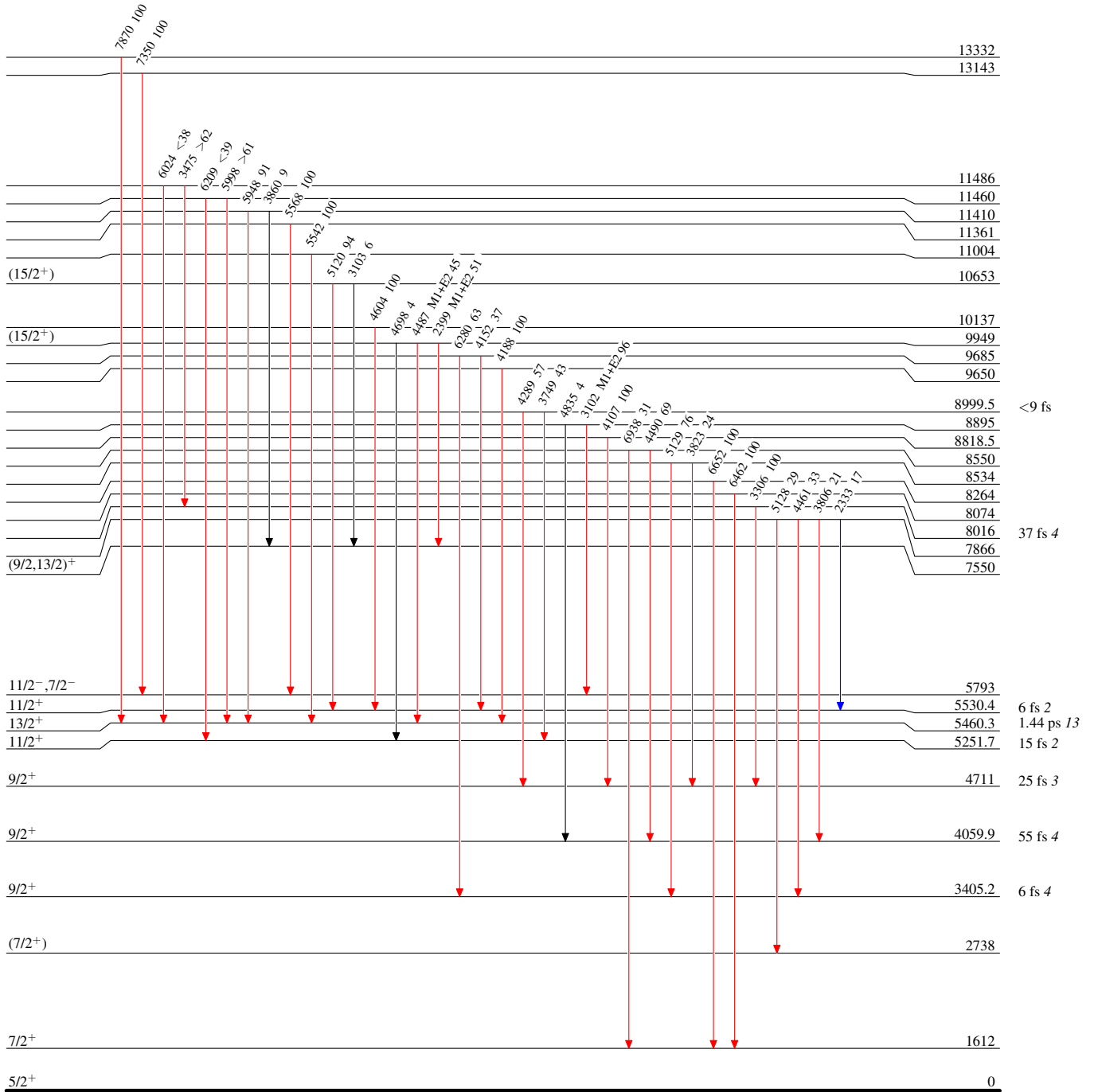
$^{12}\text{C}(^{14}\text{N,p}\gamma),(^{15}\text{N,p}_n)$ 1988He15,1991Ti02

Level Scheme

Intensities: Type not specified

Legend

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$

 $^{25}_{12}\text{Mg}_{13}$

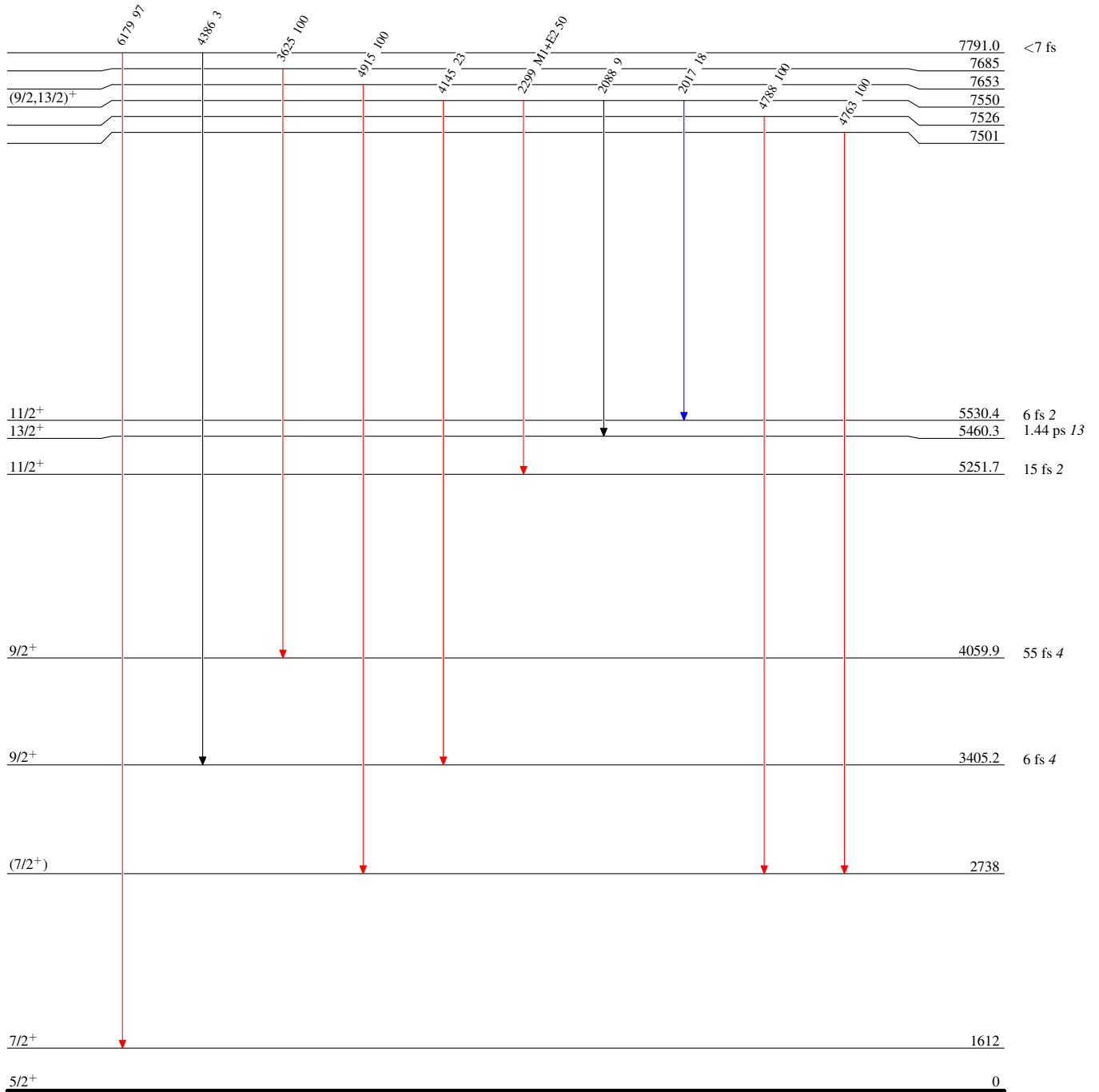
$^{12}\text{C}(^{14}\text{N,p}\gamma),(^{15}\text{N,p}_n)$ 1988He15,1991Ti02

Level Scheme (continued)

Intensities: Type not specified

Legend

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$

 $^{25}_{12}\text{Mg}_{13}$

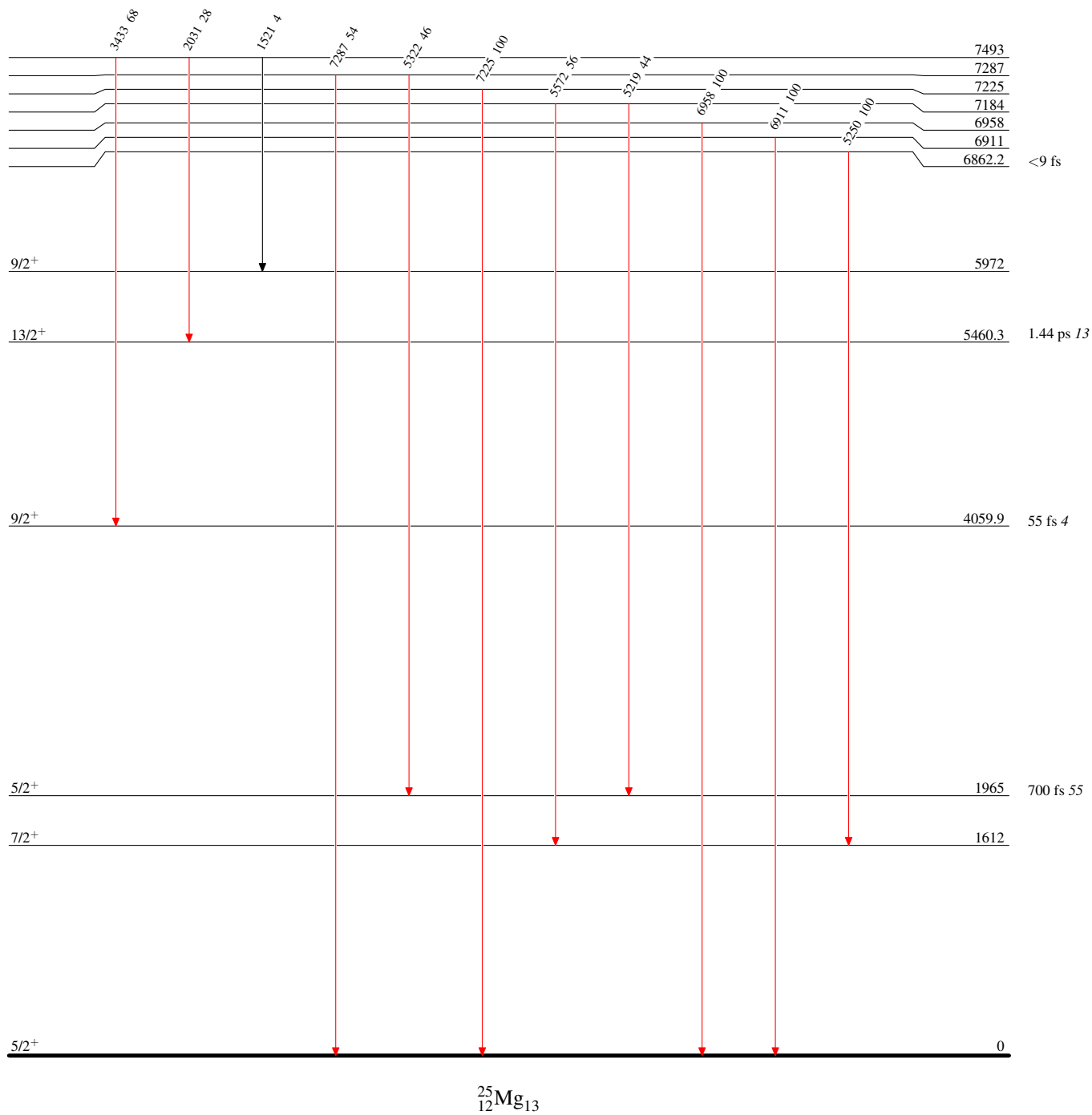
$^{12}\text{C}(^{14}\text{N},\text{p}\gamma),(^{15}\text{N},\text{p}_n)$ 1988He15,1991Ti02

Level Scheme (continued)

Intensities: Type not specified

Legend

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$



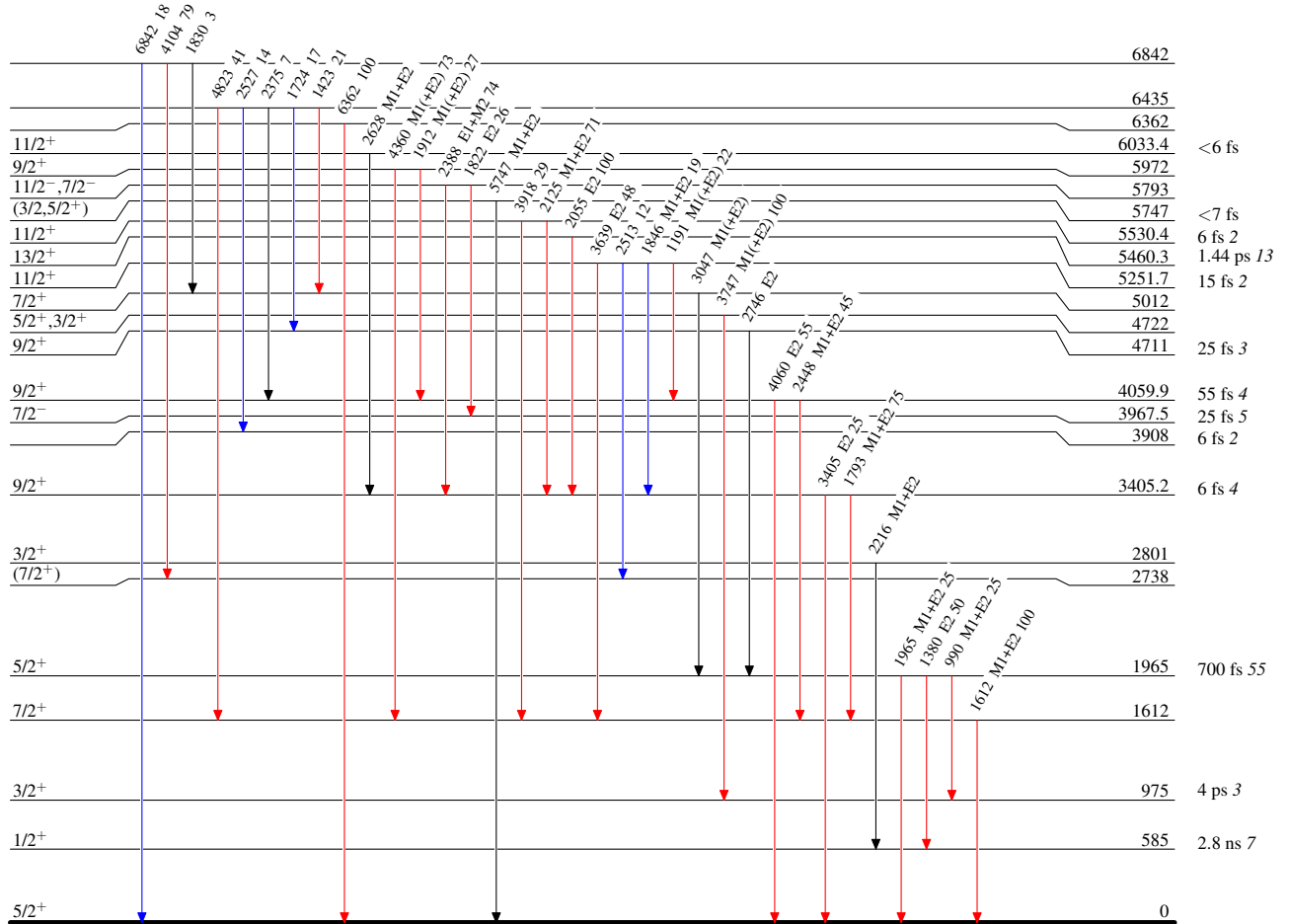
$^{12}\text{C}(^{14}\text{N,p}\gamma),(^{15}\text{N,p}_n)$ 1988He15,1991Ti02

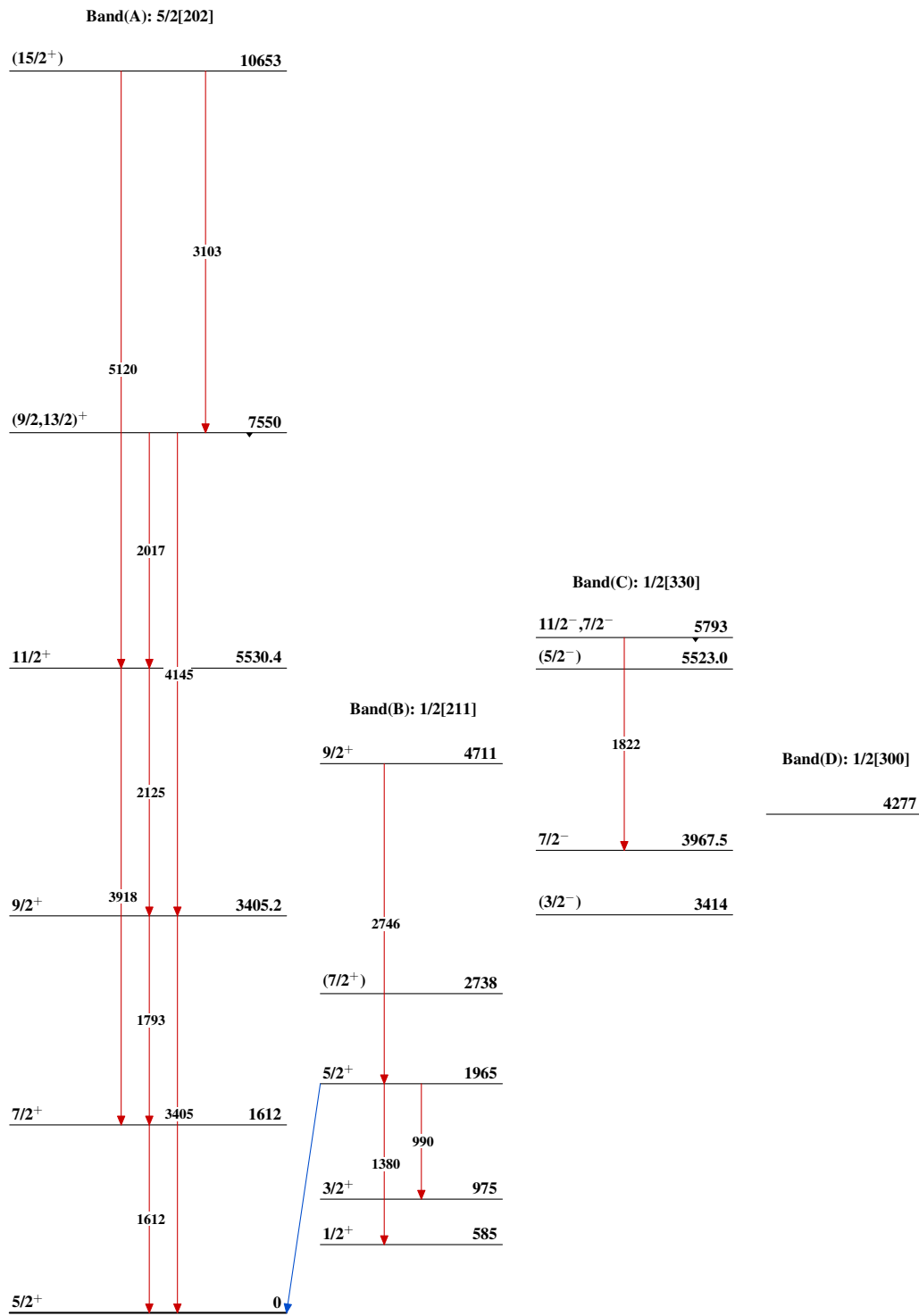
Legend

Level Scheme (continued)

Intensities: Type not specified

- \blackrightarrow $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $\color{blue}\blackrightarrow$ $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $\color{red}\blackrightarrow$ $I_\gamma > 10\% \times I_\gamma^{\text{max}}$

 $^{25}_{12}\text{Mg}_{13}$

$^{12}\text{C}(^{14}\text{N,p}\gamma),(^{15}\text{N,p}_n)$ 1988He15,1991Ti02 $^{25}_{12}\text{Mg}_{13}$