

$^{12}\text{C}(^{14}\text{N},\alpha),(^{14}\text{N},\alpha\gamma)$ 1989Ve01,1978Ha29

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia		NDS 127, 69(2015)	1-Apr-2015

1989Ve01: $^{12}\text{C}(^{14}\text{N},\alpha\gamma)$, E=32,33 MeV. Magnetic spectrometer, Measured Γ_γ/Γ , $\alpha\gamma$ coincidence, lifetime for excited states. Si and Ge(Li) detectors.

1978Ha29: $^{12}\text{C}(^{14}\text{N},\alpha)$, E=30.3,35.0,40.0,45.5 MeV and $^{14}\text{N}(^{12}\text{C},\alpha)$, E=39.3 MeV. Measured $\sigma(\theta,E)$.

 ^{22}Na LevelsE(level)[†]

0.0
584 10
644 10
892 10
1530 10
1930 10
1980 10
2221 10
2581 10
2970 10
3066 10
3518 10
3709 10
3942 10
4085 10
4284 10
4321 10
4359 10
4444 10
4516 10
4576 10
4625 10
4709 10
4764 10
5075 10
5114 10
5173 10
5308 15
5448 10
5608 10
5740 10
5858 10
5936 10
6007 10
6097 10
6196 10
6240 10
6339 10
6428 10
6462 10
6545 10
6565 15
6625 15
6667 15
6780 15
6865 15
6981 15

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$^{12}\text{C}(^{14}\text{N},\alpha),(^{14}\text{N},\alpha\gamma)$ **1989Ve01,1978Ha29** (continued) ^{22}Na Levels (continued)

E(level) [†]	$T_{1/2}$ [‡]	Comments
6992 15		
7049 15		
7153 15		
7190 15		
7255 15		
7281 15		
7380 15		
7418 15		
7574 15		
7595 15		
7694 15		
7832 15		
7887 15		
7947 15		
8013 15		
8128 15		
8221 4	<21 fs	$\Gamma_\gamma/\Gamma=0.42$ 5 (1989Ve01).
8349 15		
8416 15		
8526 15		
8572 3	<16 fs	$\Gamma_\gamma/\Gamma=0.50$ 8 (1989Ve01).
8610 3	21 fs 14	$\Gamma_\gamma/\Gamma=0.35$ 10 (1989Ve01).
8689 15		
8724 4	<32 fs	$\Gamma_\gamma/\Gamma=0.31$ 5 (1989Ve01).
8876 20		
9006 20		
9060 3	<17 fs	$\Gamma_\gamma/\Gamma=0.44$ 7 (1989Ve01).
9137 5		$\Gamma_\gamma/\Gamma=0.08$ 2, decay by proton emission (1989Ve01).
9297 20		
9378 5		$\Gamma_\gamma/\Gamma=0.03$ 1, decay by proton emission (1989Ve01).
9436 20		
9558 20		
9642 20		
9698 20		
9813 3	6 fs 3	$\Gamma_\gamma/\Gamma=0.7$ 1 (1989Ve01).
9852 20		
9901 20		
10148 20		
10217 20		
10346 20		
10422 20		
10563 20		
10640 20		
10834 20		
10977 20		
11152 20		
11254 20		
11361 20		
11460 20		
11493 20		
11570 30		
11625 20		
11768 30		
11823 20		
11927 25		
12054 20		
12118 30		

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$^{12}\text{C}(^{14}\text{N},\alpha),(^{14}\text{N},\alpha\gamma)$ **1989Ve01,1978Ha29** (continued) ^{22}Na Levels (continued)

<u>E(level)[†]</u>	<u>E(level)[†]</u>	<u>E(level)[†]</u>	<u>E(level)[†]</u>
12252 25	13292 20	14600 40	16325 50
12296 25	13326 20	14720 40	16430 50
12363 20	13364 25	14860 40	16560 50
12408 20	13419 25	15000 40	16650 50
12530 20	13474 25	15125 40	16770 50
12564 25	13547 25	15170 40	16880 50
12620 20	13705 40	15300 40	16950 50
12713 20	13840 40	15393 40	17070 50
12763 20	14070 40	15580 40	17180 50
12798 30	14160 40	15650 40	17370 50
12866 20	14330 40	15840 40	17510 50
12967 20	14430 40	15980 50	17700 50
13157 20	14535 40	16190 50	17860 50

[†] From [1978Ha29](#) if $\Delta E > 9$. Otherwise from [1989Ve01](#).

[‡] From [1989Ve01](#), measured by Doppler Shift Attenuation Method.

 $\gamma(^{22}\text{Na})$

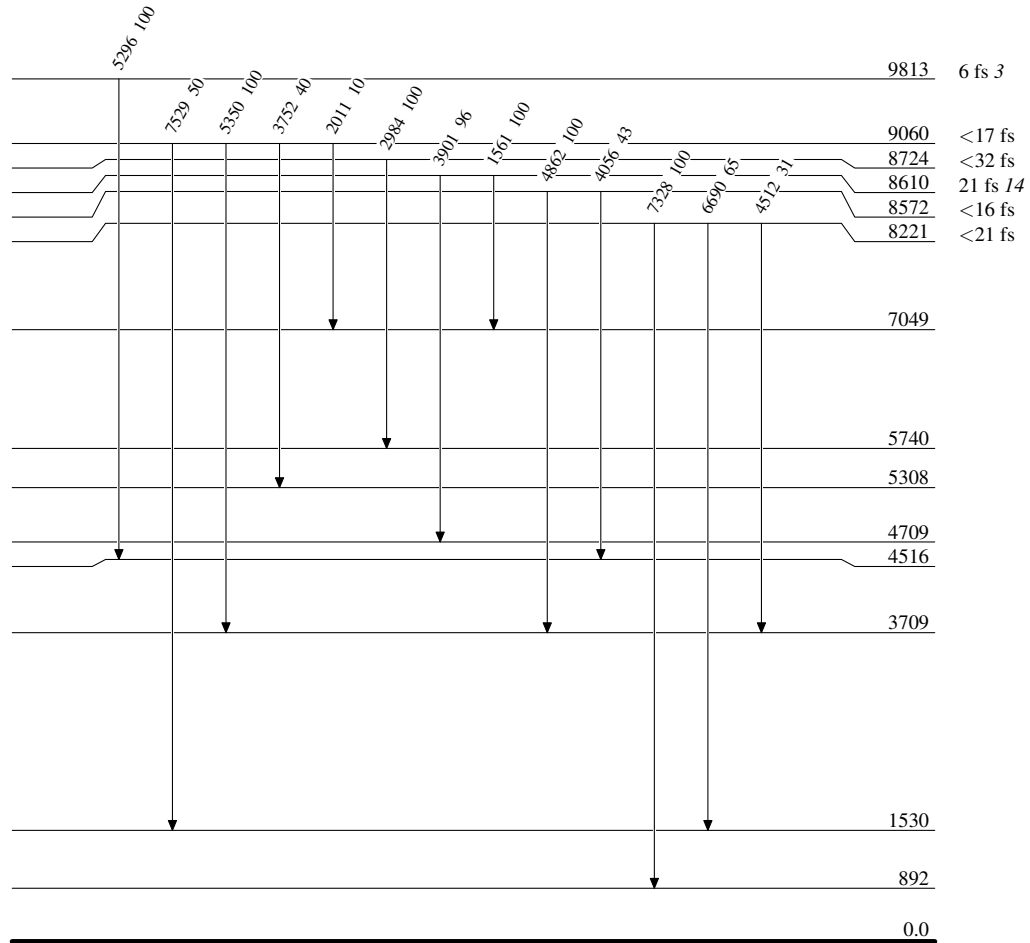
<u>$E_i(\text{level})$</u>	<u>E_γ[†]</u>	<u>I_γ[‡]</u>	<u>E_f</u>	<u>$E_i(\text{level})$</u>	<u>E_γ[†]</u>	<u>I_γ[‡]</u>	<u>E_f</u>	<u>$E_i(\text{level})$</u>	<u>E_γ[†]</u>	<u>I_γ[‡]</u>	<u>E_f</u>
8221	4512	31 12	3709	8610	1561	100 12	7049	9060	5350	100 10	3709
	6690	65 14	1530		3901	96 12	4709		7529	50 10	1530
	7328	100 14	892		8724	2984	100		5740	9813	5296
8572	4056	43 4	4516	9060	2011	10 4	7049				
	4862	100 4	3709		3752	40 6	5308				

[†] From level energy differences, recoil energy subtracted. Placement in [1989Ve01](#) – E_γ not listed.

[‡] From [1989Ve01](#).

$^{12}\text{C}(^{14}\text{N},\alpha),(^{14}\text{N},\alpha\gamma)$ **1989Ve01,1978Ha29**Level Scheme

Intensities: Relative photon branching from each level

 $^{22}_{11}\text{Na}_{11}$