Adopted Levels, Gammas 1998Ti06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	D. R. Tilley, C. Cheves, J. Kelley, S. Raman, H. Weller	NP A636, 249 (1998)	21-Apr-1997

Q(β^-)=−13892.5 *12*; S(n)=16865.30 *16*; S(p)=1.284×10^4; Q(α)=−4730 2012Wa38
Note: Current evaluation has used the following Q record.
Q(β^-)=−13886 *7*; S(n)=16864.4 *6*; S(p)=12843.50 *7*; Q(α)=−4729.84 *1* 1997Au04
See other reference in 1998Ti06.

^{20}Ne Levels

Cross Reference (XREF) Flags

A	^{20}F β^- decay	E	^{16}O(α,α), ^{16}O(α,2α)	I	^{19}F(p,γ)
B	^{20}Na β^+ decay	F	^{16}O(^{6}Li,d)	J	^{19}F(p,p), ^{19}F(p,d)
C	^{12}C(^{12}C,α)	G	^{16}O(^{7}Li,t)	K	^{19}F(p,α)
D	^{16}O(α,γ)	H	^{16}O(^{12}C,^{8}Be)		

E(level)	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0	0$^+$	stable	ABCD FGHI	T=0
1633.674 *15*	2$^+$	0.73 ps *4*	ABCD FGHI	μ=+1.08 *8* (1989Ra17); Q=−0.23 *3* (1989Ra17); T=0
4247.7 *11*	4$^+$	64 fs *6*	ABCD FGH	μ=+0.5 *6* (1989Ra17); T=0
4966.51 *20*	2$^-$	3.3 ps *4*	ABC FG I	T=0
5621.4 *17*	3$^-$	139 fs *35*	A CD F	%IT=7 *3*; %α=93 *3* Γ_γ=2.4×10^{-4} eV *6*; T=0
5787.7 *26*	1$^-$	0.028 keV *3*	A CDEFGH	%IT=0.016 *3*; %α=100 Γ_γ=4.6×10^{-3} eV *8*; T=0
6706 *47*			B	T=0
6725 *5*	0$^+$	19.0 keV *9*	A DEF	%IT=1.7×10^{-4}; %α=100 Γ_γ=0.033 eV; T=0
7004.0 *36*	4$^-$	305 fs *62*	A C F	T=0
7156.3 *5*	3$^-$	8.2 keV *3*	C EFGH	%IT=2.0×10^{-5} *2*; %α=100 Γ_γ=16.1×10^{-4} eV *15*; T=0
7191 *3*	0$^+$	3.4 keV *2*	CDE	%IT=1.29×10^{-4} *25*; %α=100 Γ_γ=4.4×10^{-3} eV *8*; T=0
7421.9 *12*	2$^+$	15.1 keV *7*	BCDEF	%IT=1.9×10^{-4} *3*; %α=100 Γ_γ=0.029 eV *4*; T=0
7833.4 *15*	2$^+$	2 keV	BCDE	%IT=3.4×10^{-3}; %α=100 Γ_γ=0.069 eV *7*; T=0
8453 *4*	5$^-$	0.013 keV *4*	CDEF	%IT=0.10 *4*; %α=99.90 *4* Γ_γ=0.013 eV *3*; T=0
≈8700	0$^+$	>800 keV	E	%α=100 T=0
8708 *7*	1$^-$	2.1 keV *8*	CDE	%IT=3.3×10^{-3} *15*; %α=100 Γ_γ=0.070 eV *17*; T=0
8777.6 *22*	6$^+$	0.11 keV *2*	CDEFGH	%IT=0.091 *21*; %α=100 Γ_γ=0.100 eV *15*; T=0
8820	(5$^-$)	<1 keV	E	%α=100 T=0
8854 *5*	1$^-$	19 keV	C E	%α=100 T=0
90.0×10^2 *18*	2$^+$	≈800 keV	E	%α=? T=0
9031 *7*	4$^+$	3 keV	CDE	%IT=0.011; %α=100 Γ_γ=0.34 eV *4*; T=0
9116 *3*	3$^-$	3.2 keV	CDE	%IT=8×10^{-4}; %α=100

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Adopted Levels, Gammas 1998Ti06 (continued)

^{20}Ne Levels (continued)

E(level)	J^π	$T_{1/2}$	XREF	Comments
				Γ_γ=0.026 eV *3*; T=0
9196 *30*	2^+		B	T=0
9318 *2*	(2^-)		CD	T=0
9487 *5*	2^+	29 keV *15*	B DE	%IT=9×10^{-4} *6*; %α=100 Γ_γ=0.26 eV *10*; T=0
9873 *4*	3^+		BC	Γ_γ/Γ=0.82 *27*; T=0
9935 *12*	(1^+)	<24.3 fs	C	T=0
9990 *8*	4^+	155 keV *30*	CDE	%IT=6×10^{-4} *3*; %α=100 Γ_γ=0.9 eV *4*; T=0
10262 *5*	5^-	145 keV *40*	C EFGH	%α=100 T=0
10273.2 *19*	2^+	≤0.3 keV	B DE	%IT=?; %α=? Γ_γ=4.6 eV *5*; T=1
10406 *5*	3^-	80 keV	C E	%α=100 T=0
10553 *5*	4^+	16 keV	C E	%α=100 T=0
10584 *5*	2^+	24 keV	B E	%α=100 T=0
10609 *6*	6^-	16 fs *5*	C	T=0
10694 *6*	$4^-,3^+$		C	T=0
10800 *75*	4^+	350 keV	EF	%α=100 T=0
10840 *6*	3^-	45 keV	C E	%IT=?; %α=? T=0
10843 *4*	2^+	13 keV	B E	%α=100 T=0
10884 *3*	3^+	<21 fs	B	Γ_γ/Γ<0.3; T=1
10917 *6*	3^+		C	T=0
10940 *9*	2^+		B	
109.7×10^2 *12*	0^+	580 keV	E	%α=100 T=0
11020 *8*	4^+	24 keV	C E	%α=100 T=0
11090 *3*	4^+	≤0.5 keV	DE	%IT=?; %α=? Γ_γ=0.34 eV *4*; T=1
11116 *9*	2^+		B	
11240 *23*	1^-	175 keV	E	%α=100 T=0
11262.3 *19*	1^+		B D	T=1
11270 *5*	1^-	≤0.3 keV	DE	%IT=?; %α=? Γ_γ=0.71 eV *6*; T=1
11320 *9*	2^+	40 keV *10*	B E	%α=100 T=0
11528 *6*	$3^+,4^-$	≤21 fs	C	T=0
11555 *6*	(3^+)		C	T=0
11558 *4*	0^+	1.1 keV *4*	DE	%IT=?; %α=? T=0
11601 *10*	2^-			T=1 Decay mode not specified.
11653 *5*	(3^+)		C	T=0
11885 *7*	2^+	46 keV	B E	%IT=?; %α=? T=0
11928 *4*	4^+	0.44 keV *15*	DE	%IT=6×10^{-3} *3*; %α=100 Γ_γ=0.026 eV *6*; T=0
11951 *4*	8^+	0.035 keV *10*	CDEFGH	%IT=0.022 *7*; %α=100

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Adopted Levels, Gammas 1998Ti06 (continued)

^{20}Ne Levels (continued)

E(level)	J$^\pi$	T$_{1/2}$	XREF	Comments
				Γ_γ=7.7×10^{-3} eV *11*; T=0
11985 *16*	1$^-$	30 keV *5*	CDE	%IT=?; %α=? T=0
12098 *6*	2$^-$		C	T=1
12137 *5*	6$^+$		C E	%α=100 T=0
12221 *4*	2$^+$	<1 keV	CD	%IT=?; %α=? T=1
12253 *10*	4$^+$	155 keV *15*	E	%α=100 T=0
12256 *3*	3$^-$	<1 keV	DE	%IT=?; %α=? T=1
12327 *10*	2$^+$	390 keV *50*	E	%α=100 T=0
12401 *5*	3$^-$	37.3 keV *9*	CDE	%IT=5×10^{-4}; %α=100 Γ_γ=0.2 eV; T=(1)
12436 *4*	0$^+$	24.4 keV *5*	CDE	%IT=7.0×10^{-4} *21*; %α=100 Γ_γ=0.17 eV *5*; T=0
12472 *10*	(2$^+$)	124 keV *6*	E	%α=100 T=0
12585 *5*	6$^+$	72 keV *9*	C EFGH	%α=100 T=0
12592 *15*	(2$^+$)	145 keV *25*	E	%α=100 T=0
12713 *5*	5$^-$	84 keV *8*	C E	%α=100 T=0
12743 *10*	(2$^+$)	61 keV *12*	C E	%α=100 T=0
12836 *5*	1$^-$	30 keV *5*	C E	%α=100 T=0
12957 *5*	2$^+$	38 keV *4*	C E	%α=100 T=0
13048 *5*	4$^+$	18 keV *3*	C E	%α=100 T=0
13060.7 *21*	2$^-$	1.0 keV		%p=?; %α=?
13095 *6*	2$^+$	162 keV *13*	E	%α=100 T=0
13105 *5*	6$^+$	102 keV *5*	E	%α=100 T=0
13137 *5*	3$^-$	48 keV *4*	E	%α=100 T=0
13171.3 *21*	1$^+$	2.3 keV *2*	IJK	%IT=?; %p=?; %α=? T=(1)
13222 *10*	0$^+$	40 keV *13*	C E K	%α=100 T=0
13224 *15*	1$^-$	80 keV	E K	%p=?; %α=? T=0
13226 *5*	3$^-$	53 keV *4*	E	%α=100 T=0
13307.5 *21*	1$^+$	0.9 keV *1*	IJK	%IT=?; %p=?; %α=?
13338 *5*	7$^-$	0.08 keV *3*	C E	%α=100 T=0
13341 *5*	4$^+$	26 keV *3*	E	%α=100 T=0
13414 *2*	3$^-$	24 keV *3*	E IJK	%α=100 T=0

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Adopted Levels, Gammas 1998Ti06 (continued)

^{20}Ne Levels (continued)

E(level)	J$^{\pi}$	T$_{1/2}$	XREF	Comments
13426 *5*	(5$^-$)	49 keV *7*	E	%α=100 T=0
13461 *10*	1$^-$	195 keV *25*	E K	%p=?; %α=?
13484 *2*	1$^+$	6.4 keV *3*	IJK	%IT=?; %p=?; %α=? T=1
13507 *5*	1$^-$	24 keV *8*	E JK	%p=?; %α=? T=0
13529 *5*	2$^+$	61 keV *8*	E	%α=100 T=0
13530 *15*	(0$^+$)	76 keV *32*	E	%α=100 T=0
13573 *5*	2$^+$	12 keV *5*	C E K	%α=100 T=0
13586 *3*	2$^+$	9 keV *1*	JK	%p=?; %α=?
13642 *3*	0$^+$	17 keV *1*	C JK	%p=?; %α=? T=1
13676.0 *23*	(2$^-$)	4.5 keV *2*	IJK	%IT=?; %p=?; %α=?
13677 *5*	5$^-$	11 keV *2*	E	%α=100 T=0
13692 *10*	7$^-$	310 keV *30*	E	%α=100 T=0
13736.0 *25*	1$^+$	7.7 keV *5*	IJK	%IT=?; %p=?; %α=?
13744 *20*	0$^+$	≈80 keV	E	%α=100 T=0
13827 *10*	3$^-$	136 keV *15*	C E	%α=100 T=0
13866 *30*	1$^-$	≈175 keV	C E K	%p=?; %α=? T=0
13881.0 *23*	2$^+$	0.14 keV *5*	C IJK	%IT=?; %p=?; %α=? T=1
13908 *5*	2$^+$	74 keV *10*	E K	%α=100 T=0
13926.0 *23*	(0$^+$)	3.5 keV *4*	K	%p=?; %α=?
13928 *5*	6$^+$	65 keV *3*	EFG	%α=100 T=0
13948 *10*	0$^+$	79 keV *15*	E	%α=100 T=0
13965 *5*	4$^+$	8.1 keV *10*	E	%α=100 T=0
14020	1$^-$	≈70 keV	K	%p=?; %α=?
14063.0 *23*	2$^+$	≈140 keV	JK	%p=?; %α=?
14115 *5*	2$^+$	42 keV *6*	E	%α=100 T=0
14128 *2*	2$^-$	4.7 keV *7*	IJK	%IT=?; %p=?; %α=?
14150.0 *23*	2$^-$	11.8 keV *10*	IJK	%IT=?; %p=?; %α=?
14200	1$^+$	14 keV *1*	IJ	%IT=?; %p=?
14270 *10*	4$^+$	92 keV *9*	E	%α=100 T=0
14304 *10*	(6$^+$)	60 keV *13*	C E	%α=100 T=0
14311 *5*	6$^+$	117 keV *8*	C EFGH	%α=100 T=0
14313 *15*	(3$^-$)	≈45 keV	E	%α=100 T=0
14370 *3*		≈5 keV	JK	%p=?; %α=?
14454 *5*	5$^-$	≈15 keV	E	%α=100

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Adopted Levels, Gammas 1998Ti06 (continued)

^{20}Ne Levels (continued)

E(level)	J^{π}	$T_{1/2}$	XREF	Comments
				T=0
14455 *3*	$(0^+,2^+)$	33 keV *3*	E JK	%p=?; %α=? T=0
14475 *6*	0^+	68 keV *2*	JK	%p=?; %α=?
14593 *10*	4^+	260 keV *25*	E	%α=100 T=0
14597 *7*	1^-	116 keV *5*	E K	%p=?; %α=? T=0
14653 *10*	(0^+)	25 keV	JK	%p=?; %α=?
14699.0 *33*	(1^+)	36 keV *10*	E JK	%p=?; %α=?
14731 *10*	(4^+)	60 keV *25*	E	%α=100 T=0
14761 *5*	6^+	7.3 keV *48*	E	%α=100 T=0
14776 *4*	(1^-)	110 keV *20*	JK	%p=?; %α=?
14807 *5*	6^+	86 keV *7*	E K	%α=100 T=0
14816 *5*	5^-	117 keV *13*	E	%α=100 T=0
14839 *10*	(4^+)	79 keV *15*	E	%α=100 T=0
14888 *10*	2^+	100 keV *30*	E K	%p=?; %α=? T=0
15047 *10*	2^+	66 keV *20*	C E K	%p=?; %α=? T=0
15073 *10*	5^-	160 keV *25*	E	%α=100 T=0
15142 *15*	(2^+)	≈60 keV	E	%α=100 T=0
15159 *5*	6^+	60 keV *15*	C	%α=? T=0
15174 *10*	5^-	230 keV *25*	E	%α=100 T=0
15230		28 keV		%p=?; %α=?
15270	(1^-)	285 keV	C EFGH	%p=?; %α=?
15330 *5*	4^+	34 keV *10*	C E	%α=100 T=0
15346 *15*	6^+		E	T=0
15366 *5*	7^-	110 keV *10*	EFGH	%α=100 T=0
15436 *15*	(3^-)	90 keV *20*	C E K	%p=?; %α=? T=0
15500		55 keV	E K	%p=?; %α=?
15700 *15*	(8^-)		C E	%α=100 T=0
15874 *9*	8^+	100 keV *15*	C F H	%α=100
15970	(6^+)		E	%α=100 T=0
16010 *25*	(2^+)	100 keV	K	%p=?; %α=? T=(1)
16139 *15*		38 keV	C E K	%α=100
16250			E	%α=100
16329 *11*	4^+	45 keV	E K	%p=?; %α=? T=0
16437 *11*	$(0,2,4)^+$	35 keV	E	%α=100 T=0

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Adopted Levels, Gammas 1998Ti06 (continued)

^{20}Ne Levels (continued)

E(level)	J^{π}	$T_{1/2}$	XREF	Comments
16505 *15*	6^{+}	24 keV *4*	E	%α=100 T=0
16559 *15*	5^{-}	90 keV *30*	E	%α=100 T=0
16581 *15*	7^{-}	92 keV *8*	C E	%α=100 T=0
16628 *20*	3^{-}	80 keV *25*	E	%α=100 T=0
16630 *20*	(7^{-})		FGH	%α=100
16667 *15*	4^{+}	100 keV *25*	E	%α=100 T=0
16717 *15*	5^{-}	≈25 keV	C E	%α=100 T=0
16732.9 *27*	0^{+}	2.0 keV *5*	IJK	%IT=?; %p=?; %α=? T=2
16746 *25*	8^{+}	160 keV *50*	E	%α=100 T=0
16847 *15*	5^{-}	16 keV *8*	E	%α=100 T=0
16871 *20*	6^{+}	350 keV *50*	E	%α=100 T=0
17072 *20*	4^{+}	180 keV *30*	E	%α=100 T=0
17155 *15*	5^{-}	26 keV *5*	E	%α=100 T=0
17213 *15*	4^{+}	225 keV *30*	E	%α=100 T=0
17284 *15*	3^{-}	86 keV *25*	E	%α=100 T=0
17295 *15*	8^{+}	200 keV *25*	EFGH	%α=100 T=0
17390 *15*		<10 keV	E	%α=100
17430 *15*	9^{-}	220 keV *25*	C E	%α=100 T=0
17541 *15*	6^{+}	86 keV *9*	E	%α=100 T=0
17550 *10*	(2^{+})	19 keV	K	%n=?; %p=?; %α=? T=(1)
17606 *15*	5^{-}	140 keV *20*	E	%α=100 T=0
17769 *20*	4^{+}	≈125 keV	E K	%p=?; %α=? T=0
17851 *15*	5^{-}	200 keV *30*	E	%α=100 T=0
17910 *20*	(0^{+})			%n=?; %p=?
18005 *15*	7^{-}	<10 keV	E	%α=100 T=0
18024 *5*	5^{-}	34 keV *7*	E	%α=100 T=0
18083 *25*	4^{+}	140 keV *60*	E	%α=100 T=0
18125 *5*	7^{-}	29 keV *6*	C E	%α=100 T=0
18286 *10*	6^{+}	190 keV *30*	E	%α=100 T=0

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Adopted Levels, Gammas 1998Ti06 (continued)

^{20}Ne Levels (continued)

E(level)	J^π	$T_{1/2}$	XREF	Comments
18430 *7*	2^+	9.5 keV *30*	IJK	%IT=3×10^{-3}; %n=?; %p=?; %α=? $\Gamma_\gamma\approx$0.30 eV; T=2
18430 *20*	7^-	185 keV *40*	E	%α=100 T=0
18494 *20*	5^-	130 keV *30*	E	%α=100 T=0
18538 *7*	8^+	138 keV *33*	C	%α=?
18621 *20*	8^+	185 keV *30*	E	%α=100 T=0
18745 *25*	6^+	140 keV *50*	E	%α=? T=0
18768 *20*	7^-	140 keV *35*	EF	%α=100 T=0
18960 *25*	8^+	200 keV *60*	E	%α=100 T=0
19051 *15*	5^-	≈90 keV	E	%α=100 T=0
19150 *20*	6^+	200 keV *50*	E	%α=100 T=0
19284 *15*	6^+	140 keV *25*	E	%α=100 T=0
19298 *25*	7^-	430 keV *60*	EF	%α=100 T=0
19443 *10*	6^+	130 keV *15*	E	%α=100 T=0
19536 *25*	6^+	250 keV *60*	E	%α=100 T=0
19655 *20*	6^+	140 keV *35*	E	%α=100 T=0
19731 *20*	8^+	330 keV *60*	E	%α=100 T=0
19845 *40*	6^+	3.6×10^2 keV *12*	E	%α=100 T=0
19859 *10*	5^-	170 keV *25*	E	%α=100 T=0
19884 *40*	7^-	≈120 keV	EF	%α=100 T=0
19991 *30*	4^+	1.3×10^2 keV *10*	E	%α=100 T=0
20027 *15*	6^+	80 keV *35*	E	%α=100 T=0
20106 *25*	7^-	190 keV *35*	E	%α=100 T=0
201.5×10^2 *15*				%IT=?; %n=? $T_{1/2}$: Γ=broad.
20168 *35*	6^+	2.9×10^2 keV *10*	E	%α=100 T=0
20296 *15*	7^-	255 keV *40*	E	%α=100 T=0
20341 *20*	5^-	190 keV *40*	E	%α=100 T=0
20344 *15*	7^-	135 keV *35*	E	%α=100 T=0
20419 *30*	6^+	215 keV *90*	E	%α=100 T=0
20445 *25*	6^+	370 keV *55*	E	%α=100

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Adopted Levels, Gammas 1998Ti06 (continued)

^{20}Ne Levels (continued)

E(level)	J^{π}	$T_{1/2}$	XREF	Comments
				T=0
20468 *30*	5^-	280 keV *70*	E	%α=100 T=0
20686 *6*	9^-	78 keV *11*	C E G	%α=100 T=0
20760 *30*	7^-	240 keV *50*	EF	%α=100 T=0
20800 *25*	5^-	170 keV *60*	E	%α=100 T=0
20950 *40*	7^-	300 keV *50*	C E	%α=100 T=0
21062 *6*	9^-	60 keV *6*	C E GH	%α=100 T=0
2130×10^1 *10*	7^-	300 keV	EF	%α=100 T=0
2180×10^1 *10*	7^-	300 keV	C EF	%α=100 T=0
2230×10^1 *10*	7^-	500 keV	C EF	%α=100 T=0
2260×10^1 *30*				%IT=?; %n=? $T_{1/2}$: Γ=broad.
22800 *60*	9^-	500 keV	C E	%α=100 T=0
22870 *40*	9^-	225 keV *40*	C E GH	%α=100 T=0
2340×10^1 *20*	8^+	500 keV	E	%α=100 T=0
23700 *30*	(9^-)	≤200 keV	FG	%α=100
24210 *25*	8^+	350 keV	E G	%α=100 T=0
2490×10^1 *50*				%IT=?; %n=? $T_{1/2}$: Γ=broad.
25100 *50*	8^+	≈200 keV	E G	%α=100 T=0
25670 *50*		≈400 keV	E G	%α=100
2710×10^1 *10*	(9^-)	700 keV	EF H	%α=100
27500	10^+			%IT=?; %n=? $T_{1/2}$: Γ=broad.
28000	8^+	1600 keV	E	%α=100 T=0
2820×10^1 *30*		700 keV	E	%α=100

γ(^{20}Ne)

E_i(level)	J^{π}_i	E_{γ}	I_{γ}	E_f	J^{π}_f	Mult.	Comments
1633.674	2^+	1633.602 *15*	100	0.0	0^+	[E2]	B(E2)(W.u.)=20.3 *10*
4247.7	4^+	2613.8 *11*	100	1633.674	2^+	[E2]	B(E2)(W.u.)=22 *2*
4966.51	2^-	3332.54 *20*	99.4 *2*	1633.674	2^+	[E1+M2+E3]	B(E1)(W.u.)=7.3×10^{-6} *8*; B(M2)(W.u.)=0.017 *4*; B(E3)(W.u.)=6 *2* δ(M2/E1)=0.076 *11*, δ(E3/E1)=0.043 *16*.
		4965.85 *20*	0.6 *2*	0.0	0^+	[M2]	B(M2)(W.u.)=0.0025 *8*
5621.4	3^-	654.9 *18*	4.8 *16*	4966.51	2^-	[M1]	B(M1)(W.u.)=2.0×10^{-3} *9*
		3987.3 *17*	87.6 *10*	1633.674	2^+	[E1]	B(E1)(W.u.)=6.6×10^{-6} *19*

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas 1998Ti06 (continued)

$\gamma(^{20}Ne)$ (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	δ	Comments
5621.4	3^-	5620.6 *17*	7.6 *10*	0.0	0^+	[E3]		B(E3)(W.u.)=11 *4*
5787.7	1^-	4154 *3*	82 *5*	1633.674	2^+	[E1]		B(E1)(W.u.)=1.1×10^{-4} *2*
		5787 *3*	18 *5*	0.0	0^+	[E1]		B(E1)(W.u.)=8.3×10^{-6} *3*
6725	0^+	5090 *5*	100	1633.674	2^+	[E2]		B(E2)(W.u.)=3.6
		6724 *5*		0.0	0^+	[E0]		
7004.0	4^-	1383 *4*	25	5621.4	3^-	[M1]		B(M1)(W.u.)=6.9×10^{-3}
		2037 *4*	11	4966.51	2^-	[E2]		B(E2)(W.u.)=1.8
		2756 *4*	63.5	4247.7	4^+	[E1]		B(E1)(W.u.)=9.1×10^{-5}
		5369 *4*	0.5 *2*	1633.674	2^+	[M2]		B(M2)(W.u.)=1.5×10^{-2} *8*
7156.3	3^-	1369 *3*	40 *5*	5787.7	1^-	[E2]		B(E2)(W.u.)=50 *8*
		2908.4 *12*	60 *5*	4247.7	4^+	[E1]		B(E1)(W.u.)=7.9×10^{-5} *9*
7191	0^+	5556 *3*	100	1633.674	2^+	[E2]		B(E2)(W.u.)=0.31 *6*
		7190 *3*		0.0	0^+	[E0]		
7421.9	2^+	3173.9 *17*	≤7.6	4247.7	4^+			I_γ: author quotes Iγ/Σ (Iγ)≤7.6%.
		5787.3 *12*	≥89.2	1633.674	2^+	[M1+E2]	+8.4 *+15−10*	B(M1)(W.u.)=1.0×10^{-4} *3*; B(E2)(W.u.)=1.7 *2* I_γ: author quotes Iγ/Σ (Iγ)≥90.6% 14.
		7420.4 *12*	≤10.8	0.0	0^+			I_γ: author quotes Iγ/Σ (Iγ)≤9.4% 14.
7833.4	2^+	3585.4 *19*	<2	4247.7	4^+			
		6198.7 *15*	17 *1*	1633.674	2^+	[M1]		B(M1)(W.u.)=2.3×10^{-3} *3*
		7831.8 *15*	83 *1*	0.0	0^+	[E2]		B(E2)(W.u.)=0.73 *9*
8453	5^-	2832 *5*	100	5621.4	3^-	[E2]		B(E2)(W.u.)=27 *6*
8708	1^-	7073 *7*	13 *8*	1633.674	2^+	[E1]		B(E1)(W.u.)=5×10^{-5} *3*
		8706 *7*	87 *8*	0.0	0^+	[E1]		B(E1)(W.u.)=1.9×10^{-4} *5*
8777.6	6^+	4529.3 *25*	100	4247.7	4^+	[E2]		B(E2)(W.u.)=20 *3*
9031	4^+	4782 *7*	<2	4247.7	4^+			
		7396 *7*	100	1633.674	2^+	[E2]		B(E2)(W.u.)=5.8 *7*
9116	3^-	3495 *4*	17 *4*	5621.4	3^-	[M1]		B(M1)(W.u.)=4.9×10^{-3} *12*
		4149 *3*	33 *5*	4966.51	2^-	[M1]		B(M1)(W.u.)=5.8×10^{-3} *11*
		7480 *3*	50 *5*	1633.674	2^+	[E1]		B(E1)(W.u.)=6.2×10^{-5} *10*
9318	(2^-)	7682.7 *20*	100	1633.674	2^+			
9487	2^+	7848 *3*	100	1633.674	2^+	[M1]		B(M1)(W.u.)=2.5×10^{-2} *10* I_γ: authors report Iγ/Σ (Iγ)=(100)%.
		9481 *3*		0.0	0^+			
9873	3^+	2451 *5*	≈3	7421.9	2^+			
		4252 *5*	≈7	5621.4	3^-			
		4905 *4*	≤5	4966.51	2^-			
		5624 *5*	12 *3*	4247.7	4^+			
		8237 *4*	78	1633.674	2^+			
		9870 *4*	<0.5	0.0	0^+			
9935	(1^+)	4967 *12*	22 *5*	4966.51	2^-			
		8299 *12*	78 *5*	1633.674	2^+			
9990	4^+	8354 *8*	100	1633.674	2^+	[E2]		B(E2)(W.u.)=8.3 *37* I_γ: authors report Iγ/Σ (Iγ)=(100)%.
		9987 *8*		0.0	0^+			
10273.2	2^+	2440.4 *33*	0.22 *6*	7833.4	2^+	[M1]		B(M1)(W.u.)=2.6×10^{-2} *7*
		2852 *4*	6.9 *4*	7421.9	2^+	[M1]		B(M1)(W.u.)=0.64 *8*
		4652 *4*	2.1 *2*	5621.4	3^-	[E1]		B(E1)(W.u.)=1.9×10^{-3} *3*
		5306 *3*	1.3 *1*	4966.51	2^-	[E1]		B(E1)(W.u.)=8.0×10^{-4} *11*
		8638 *3*	88.9 *5*	1633.674	2^+	[M1]		B(M1)(W.u.)=0.30 *3*
		10271 *3*	0.65 *14*	0.0	0^+	[E2]		B(E2)(W.u.)=9.5×10^{-2} *26*
10609	6^-	2156 *8*	4.5 *12*	8453	5^-	[M1]		B(M1)(W.u.)=6.1×10^{-3} *28*
		3605 *8*	95.5 *12*	7004.0	4^-	[E2]		B(E2)(W.u.)=17 *6*
10694	$4^-,3^+$	5726 *6*	75 *4*	4966.51	2^-			
		6445 *6*	25 *4*	4247.7	4^+			
10884	3^+	6635 *4*	23 *5*	4247.7	4^+			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas 1998Ti06 (continued)

$\gamma(^{20}$Ne) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	Comments
10884	3^+	9248 *3*	77 *5*	1633.674	2^+		
11090	4^+	6841 *4*	99.50 *25*	4247.7	4^+	[M1]	B(M1)(W.u.)=5.0×10^{-2} *6*
		9454 *3*	0.50 *25*	1633.674	2^+	[E2]	B(E2)(W.u.)=1.0×10^{-2} *5*
11262.3	1^+	9626.1 *19*	16 *5*	1633.674	2^+	[M1]	B(M1)(W.u.)=0.11 *4*
		11258.9 *19*	84 *5*	0.0	0^+	[M1]	B(M1)(W.u.)=0.37 *7*
11270	1^-	1952 *6*	9 *1*	9318	(2^-)	[M1]	B(M1)(W.u.)=0.40 *6*
		2416 *7*	27.0 *15*	8854	1^-	[M1]	B(M1)(W.u.)=0.63 *8*
		6302 *5*	6.5 *10*	4966.51	2^-	[M1]	B(M1)(W.u.)=8.8×10^{-3} *7*
		9634 *5*	2.5 *10*	1633.674	2^+	[E1]	B(E1)(W.u.)=4.0×10^{-5} *16*
		11267 *5*	55 *2*	0.0	0^+	[E1]	B(E1)(W.u.)=5.4×10^{-4} *7*
11528	$3^+,4^-$	4523 *7*		7004.0	4^-		Deexcites the 11528 and/or the 11555 level.
		6560 *6*	70 *3*	4966.51	2^-		
		7279 *6*	30 *3*	4247.7	4^+		
11555	(3^+)	4550 *7*		7004.0	4^-		Deexcites the 11555 and/or the 11528 level.
		9918 *6*		1633.674	2^+		
11558	0^+	7309 *5*	<8	4247.7	4^+		
		9921 *4*	100	1633.674	2^+		
11653	(3^+)	7404 *6*	86 *3*	4247.7	4^+		
		10016 *5*	14 *3*	1633.674	2^+		
11928	4^+	7678 *5*	79 *11*	4247.7	4^+	[M1]	B(M1)(W.u.)=2.2×10^{-3} *6*
		10291 *4*	21 *11*	1633.674	2^+	[E2]	B(E2)(W.u.)=1.8×10^{-2} *10*
11951	8^+	3173 *5*	100	8777.6	6^+	[E2]	B(E2)(W.u.)=9.0 *13*
12221	2^+	10584 *4*	100	1633.674	2^+		I_γ: authors report $I\gamma/\Sigma$ $(I\gamma)$=(100)%.
12256	3^-	6634 *4*	37.0 *15*	5621.4	3^-		
		10619 *3*	63.0 *15*	1633.674	2^+		
12401	3^-	8151 *6*	≈70	4247.7	4^+	[E1]	B(E1)(W.u.)=7.4×10^{-4}
		10764 *5*	≈29	1633.674	2^+	[E1]	B(E1)(W.u.)=1.3×10^{-4}
		12397 *5*	≈1	0.0	0^+		
12436	0^+	10796 *5*	100	1633.674	2^+	[E2]	B(E2)(W.u.)=0.43 *13*
13484	1^+	8515.6 *20*	5	4966.51	2^-		
		11846.5 *20*	95	1633.674	2^+		
13881.0	2^+	8912 *23*	80	4966.51	2^-		
		12243 *23*	20	1633.674	2^+		
16732.9	0^+	5469 *6*	100	11262.3	1^+		I_γ: authors report $I\gamma/\Sigma$ $(I\gamma)$=(100)%.
		10941 *6*		5787.7	1^-		
		15092 *5*		1633.674	2^+		
18430	2^+	6208 *21*	100	12221	2^+	[M1]	B(M1)(W.u.)=6×10^{-2} I_γ: authors report $I\gamma/\Sigma$ $(I\gamma)$=(100)%.

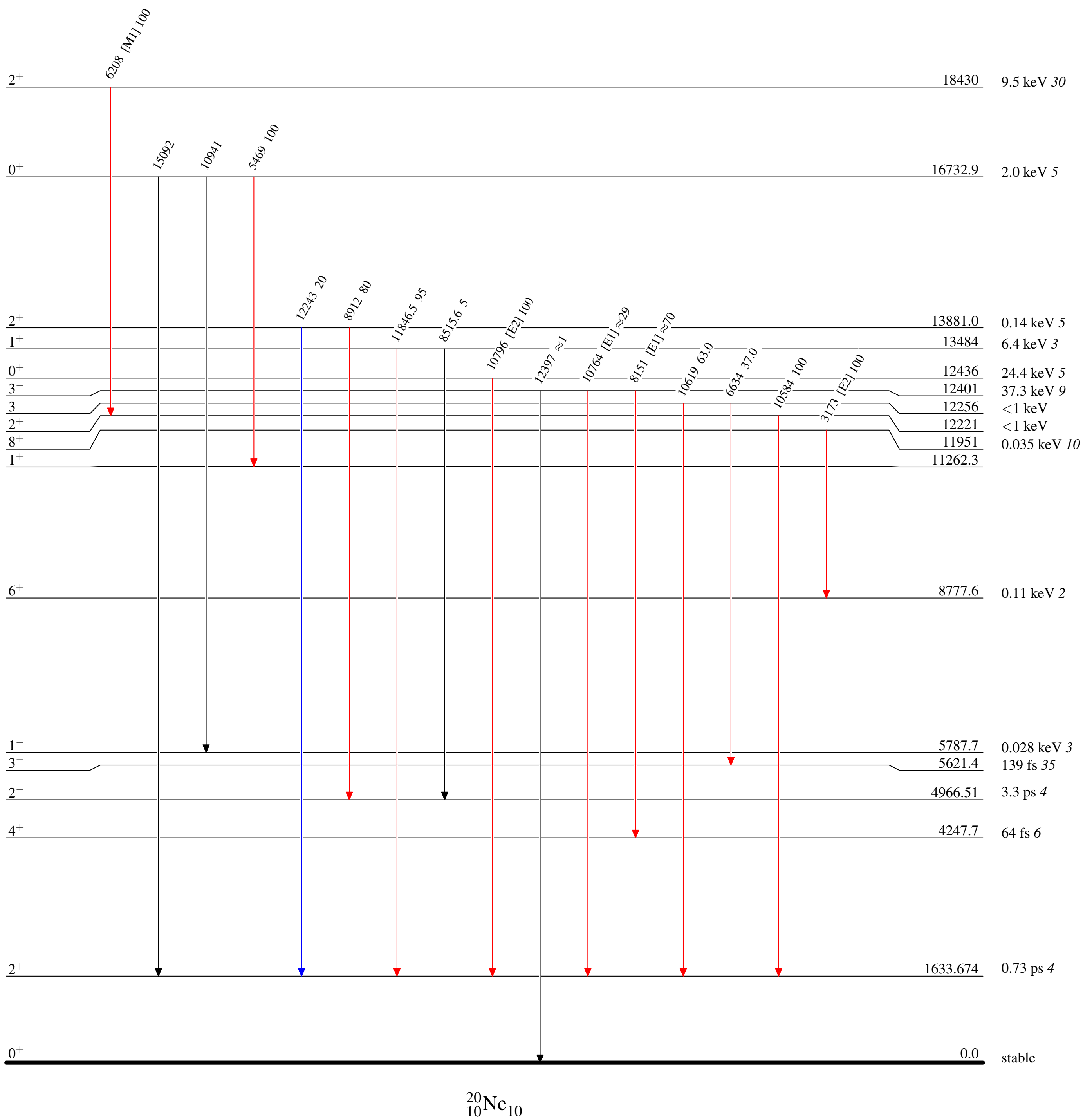
Adopted Levels, Gammas 1998Ti06

Legend

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

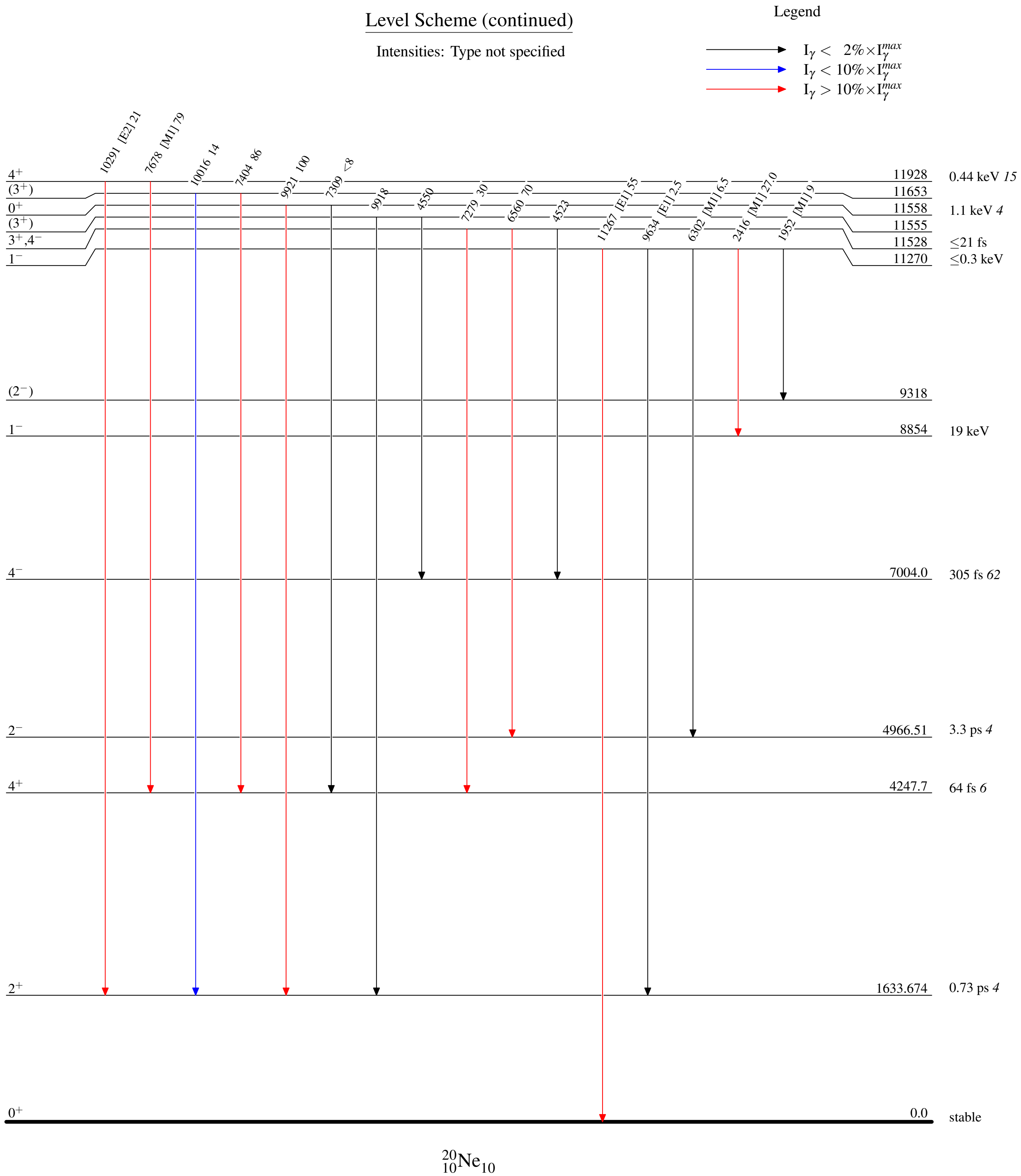
Level Scheme

Intensities: Type not specified



$^{20}_{10}$Ne$_{10}$

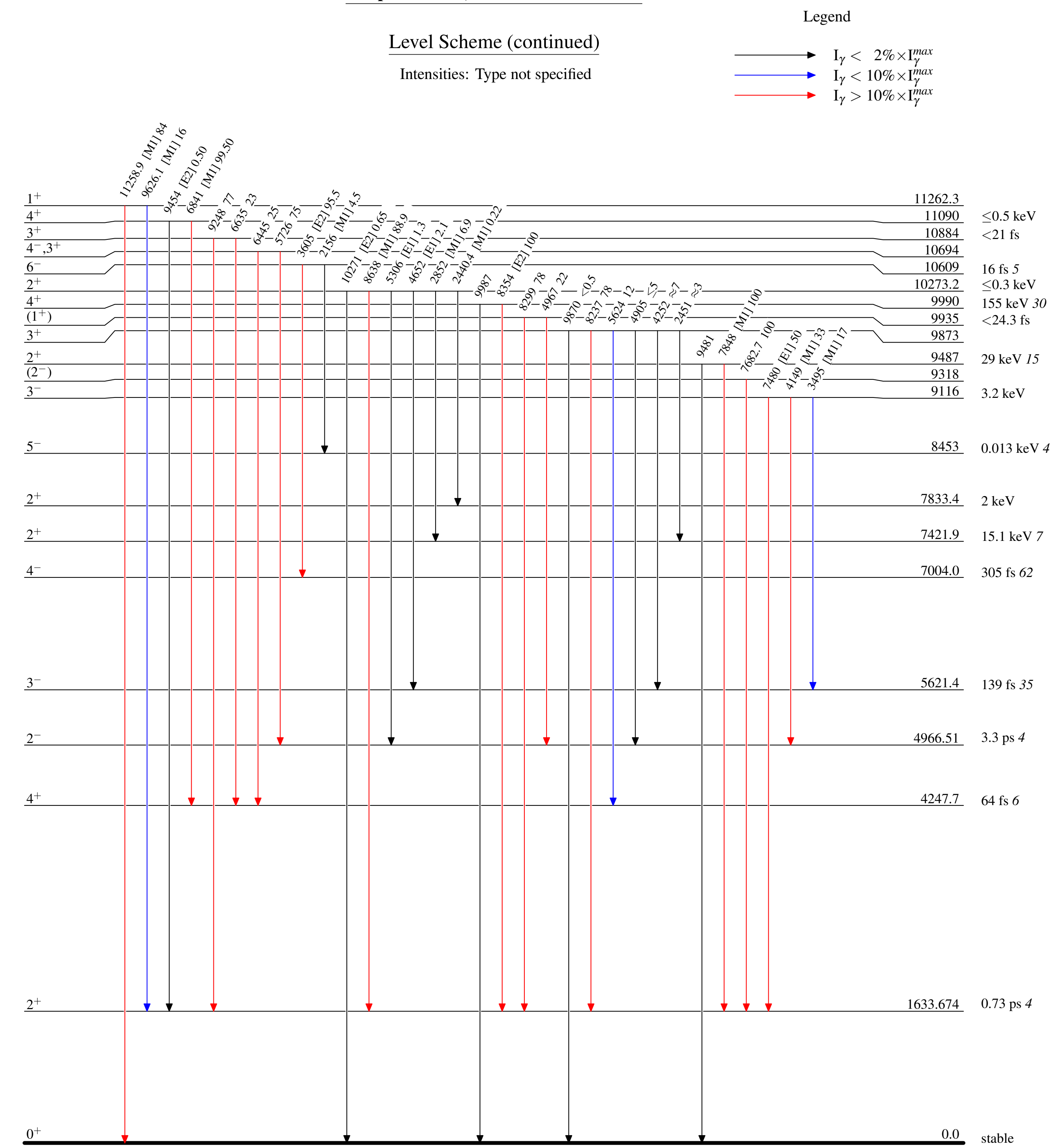
Adopted Levels, Gammas 1998Ti06



Adopted Levels, Gammas 1998Ti06

Level Scheme (continued)

Intensities: Type not specified

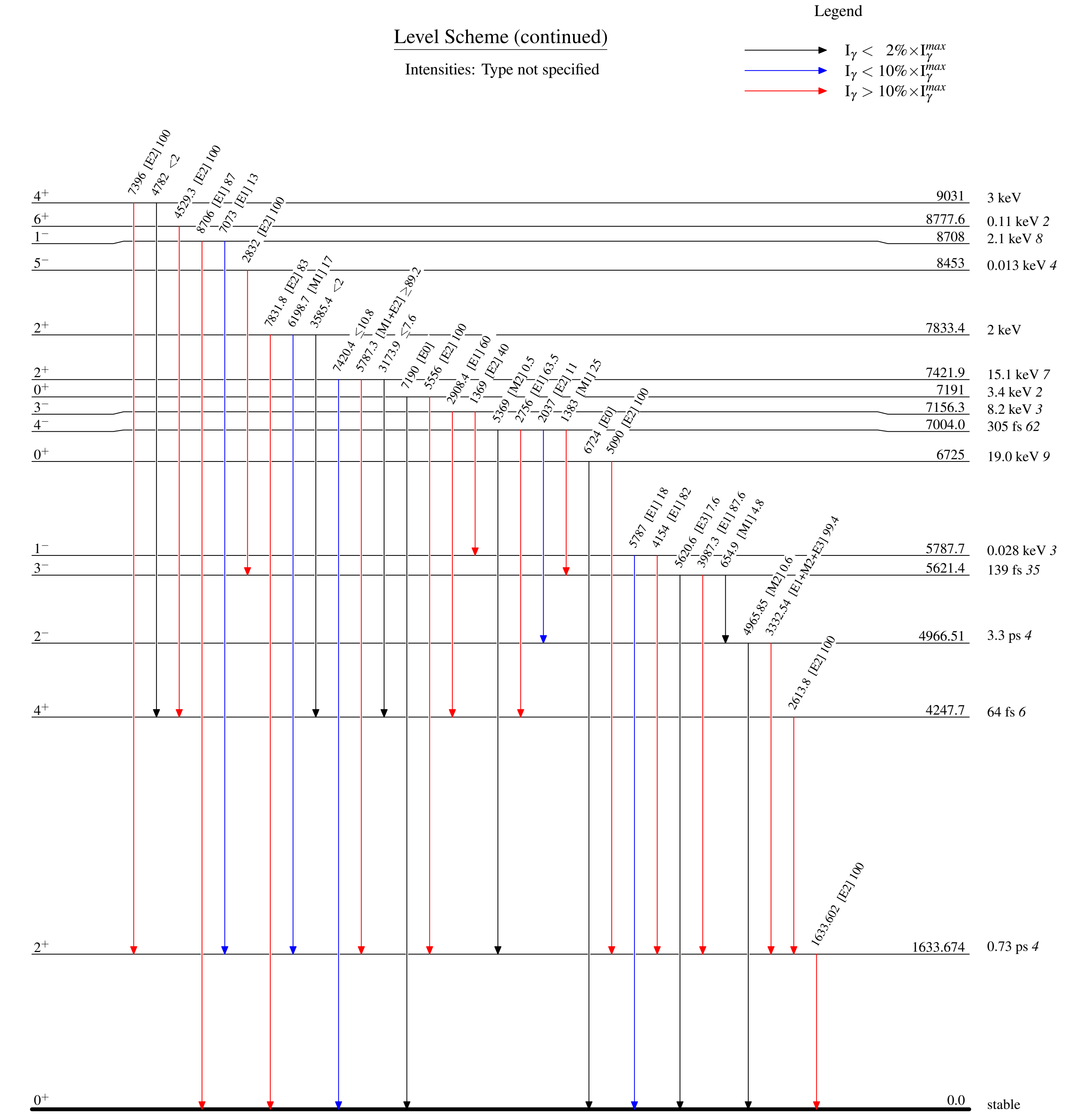


$^{20}_{10}Ne_{10}$

Adopted Levels, Gammas 1998Ti06

Level Scheme (continued)

Intensities: Type not specified



$^{20}_{10}Ne_{10}$

Adopted Levels, Gammas

History

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

Q(β^-)=−2843.20 *17*; S(n)=10364.26 *4*; S(p)=15266.1 *18*; Q(α)=−9666.81 *2* 2012Wa38

2006As01: No evidence of excited state population in ^{22}Ne from ^{9}Be(^{18}O,α^{14}C), (^{18}O,^{10}Be^{12}C), and (^{18}O,^{9}Be^{13}C) reactions.

Other reaction: ^{22}Ne(α,α'): 1971Ol01,1984Sa28,1987Su09.

^{22}Ne Levels

Cross Reference (XREF) Flags

A	^{22}F β^- decay	J	^{18}O(^{6}Li,d)	S	^{22}Ne(e,e′)
B	^{22}Na ε decay	K	^{18}O(^{7}Li,t),(^{7}Li,tγ)	T	^{22}Ne(p,p′)
C	^{4}He(^{19}F,pγ)	L	^{19}F(α,pγ)	U	Coulomb excitation
D	^{11}B(^{13}C,d)	M	^{20}Ne(t,p)	V	^{23}Na(d,^{3}He)
E	^{12}C(^{18}O,^{8}Be),^{14}C(^{18}O,^{10}Be)	N	^{20}Ne(t,pγ)	W	^{23}Na(t,α)
F	^{14}C(^{12}C,α)	O	^{21}Ne(n,γ) E=thermal	X	^{26}Mg(d,^{6}Li)
G	^{18}O(α,γ)	P	^{21}Ne(n,γ): res	Y	^{26}Mg(^{3}He,^{7}Be)
H	^{18}O(α,n): res	Q	^{21}Ne(d,p)	Z	^{150}Nd(^{26}Mg,^{22}Neγ)
I	^{18}O(^{4}He,^{4}He′): res	R	^{22}Ne(γ,γ')		

E(level)[†]	J$^\pi$	T$_{1/2}$[g]	XREF	Comments
0.0[c]	0$^+$[cf]	stable	ABCD GH JKLMNOPQRSTUVWXY	δ<r^2>(^{20}Ne,^{22}Ne)=−0.321 fm^2 *4* (stat) *43* (syst) (2011Ma48,2008Ge07). Absolute ^{22}Ne charge radius=2.952 fm *9* (2008Ge07) deduced with respect to known ^{20}Ne charge radius=3.006 fm *5*. J$^\pi$: From optical spectroscopy (1927Ha01); L=0 in (^{6}Li,d), (^{7}Li,t), and (t,p); natural parity.
1274.537[c] *7*	2$^+$[cf]	3.60 ps *5*	AB D G JKLMNOPQ S UVWXYZ	μ=+0.65 *2*; Q=−0.19 *4* E(level): From γ-ray energy. J$^\pi$: E2 to 0$^+$; L=2 in (^{6}Li,d), (^{7}Li,t), and (t,p); natural parity. μ: Recoil into Vacuum, Differential method (1977Ho01, 2014StZZ). Q: Coulomb Excitation Reorientation (1981Sp07, 2014StZZ). T$_{1/2}$: From mean lifetime 5.19 ps *7*: weighted average of mean lifetimes − 5.16 ps *13* (1984Bh03), 5.1 ps *2* (1983Ko01), 4.6 ps *6* (1979Ma13), 5.15 ps *31* (1979Fo02), 5.2 ps *3* (1977Ho01), 5.62 ps *20* (1977Ra01), 4.9 ps *7* (1977Og03), 5.15 ps *14* (1977Sc36), 4.9 ps *4* (1974Ol01), 5.4 ps *4* (1973An01), 5.5 ps *10* (1973Si31), 5.9 ps *11* (1972Sn01), 5.9 ps *6* (1972Sz05), 3.6 ps *7* (1970Na07), 4.6 ps *5* (1969Jo10), 6.1 ps *5* (1969ScZV), and 3.1 ps *11* (1960An07).
3357.2[‡c] *5*	4$^+$[cf]	225 fs *4*	A D G JKLMN Q S VWXYZ	μ=+2.2 *6* J$^\pi$: L=4 in (^{6}Li,d); natural parity. μ: Tilted Foil hyperfine field integral perturbed angular

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{22}Ne Levels (continued)

E(level)[†]	J^π	$T_{1/2}$[g]	XREF	Comments
				correlation (1984Ba10, 2014StZZ). $T_{1/2}$: From mean lifetime 324 fs *6*: weighted average of mean lifetimes – 324 fs *9* (1979Fo02), 311 fs *17* (1978Fi04), 328 fs *10* (1978Ek01), 285 fs *50* (1974Fi16), 360 fs *50* (1972Br17 – average of measurements with 39 different slowing down materials), 270 fs *90* (1968Ku05), 400 fs *110* (1967Wa13), and 390 fs *80* (1964Es02).
4456.2 *9*	2^+[f]	3.7[i] fs *25*	A CD G JKLMN Q S VWXYZ	J^π: E2 to 0^+; L=2 in (^{6}Li,d), (^{7}Li,t), and L=(2) in (t,p); natural parity. $T_{1/2}$: From (e,e′) – 1979Ma13. Other values: <11 fs (1979Al01–(^{19}F,pγ)), <30 (α,pγ)), while 37 fs *6* (1993Ol05 – (α,pγ)) is higher compared to other values.
5146.0 *9*	2^-[f]	0.8 ps *2*	CD G KLMN Q VWX	J^π: E1 to 2^+, L=1,3 in (t,p); unnatural parity. $T_{1/2}$: From mean lifetime 1.1 ps *2*: weighted average of mean lifetimes – 1.2 ps *3* (1975Me19), 1.15 ps *45* (1976Fi02), 1.3 ps *5* (1979Al01), and 0.9 ps *4* (1993Ol05).
5329.6 *13*	1^+[f]	1.2 fs *3*	D G L N QRS W	E(level): Weighted average of data from (e,e′), (γ,γ′), and (α,pγ). J^π: M1+E2 to 2^+, $J^\pi=1^+$ in (e,e′) (1974Ma43); (unnatural parity). $T_{1/2}$: From mean lifetime 1.7 ps *3*: Weighted average of 1.7 fs *3* (e,e′) (1979Ma13) and 1.8 fs *7* (γ,γ′) (1984Be26).
5363.4 *11*	2^+[f]	69[i] fs *12*	D JKLMN Q WX	J^π: E2 to 0^+; L=2 in (t,p); natural parity. $T_{1/2}$: <20 fs in 1976Fi02 – reason for this discrepancy is unknown.
5523.3[‡] *6*	$(4)^+$[f]	21 fs *3*	A CD JKLMN Q WX Z	J^π: L=4 in (^{6}Li,d), (t,p); natural parity; J=3 in ^{11}B(^{13}C,d). $T_{1/2}$: From mean lifetime 30 fs *4*: Weighted average of 27 fs *4* (1979Al01) and 37 fs *6* (1993Ol05). Uncertainty – lower experimental value.
5641.2[‡] *7*	3^+[f]	<3[i] fs	A CD KLMN Q WX	J^π: M1 to 2^+; L=2 in (d,p); unnatural parity.
5910.1 *9*	3^-[f]	32 fs *11*	A D JKLMN S WX	E(level): From (n,γ). J^π: E1 to 2^+; L=3 in (^{6}Li,d); natural parity; γ to 4^+. $T_{1/2}$: From mean lifetime 46 fs *16*: Weighted average of 51 fs *23* (1976Fi02) and 44 fs *16* (1993Ol05). Uncertainty – lower experimental value.
6119.9 *16*	2^+[f]	14 fs *7*	D JKLMN Q S WX	J^π: L=2 in (t,p); natural parity. $T_{1/2}$: From (e,e′). Other value: 24 fs *9* (1993Ol05).
6235 *2*	0^+[f]	236[i] fs *83*	JKLM S X	J^π: L=0 in (^{6}Li,d), (^{7}Li,t), and (t,p); natural parity.
6311.0[c] *10*	(6^+)[c]	49 fs *4*	CD G L W Z	$T_{1/2}$: From mean lifetime 70 fs *6*: Weighted average of 78 fs *15* (1976Fi02), 70 fs *10* (1979Al01), and 69 fs *6* (1993Ol05). Uncertainty – lowest experimental value.
6345.1[‡] *10*	4^+[f]	13[i] fs *3*	A CD G KLMN Q WX	J^π: L=4 in (t,p), natural parity.
6635.8 *8*	$(3,4)^+$	49[i] fs *21*	CD LM Q WX	J^π: M1+E2 to 4^+, γ to 2^+, L=2 in (d,p).
6689.0 *11*	1^-[f]	243[i] fs *132*	KLM S WX	J^π: L=1 in (t,p); natural parity.
6819.4 *16*	2^+	<3[i] fs	CD KLM Q S WX	J^π: L=2 in (t,p), (^{7}Li,t); natural parity.
6853.5 *16*	(1^+)	0.38[#] fs *16*	D G LM QRST W	J^π: M1 to 0^+ and 2^+, also from σ(θ) and DWIA calculation in (p,p′).

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Adopted Levels, Gammas (continued)

^{22}Ne Levels (continued)

E(level)[†]	J^π	$T_{1/2}$[g]	XREF	Comments
6900 *2*	0^+	76[i] fs *8*	KLM S W	J^π: L=0 in (^{7}Li,t).
7051 *3*	1^-[f]	100[i] fs *30*	D KLMN Q S W	J^π: L=1 in (t,p); natural parity.
7341.1 *11*	0^+[f]	<3[i] fs	D JKL N Q WX Z	J^π: L=0 in (^{7}Li,t), (^{6}Li,d) for doublet; natural parity for doublet. γ-rays to 1^+ and 2^+.
7341.2[‡] *11*	$(4)^+$[f]	35[i] fs *21*	A D LM	J^π: L=(4) in (t,p); natural parity.
7405.9 *7*	$(3)^-$[f]	32[i] fs *10*	D KLM Q WX	J^π: L=1 in (d,p), E1 to 2^+ (α,pγ), γ-ray feeding from 4^+ state at 8855; natural parity for doublet. Another possibility 1^-, as suggested in 1993O105 – (α,pγ), less likely considering γ feeding from 4^+.
7423.0[‡] *9*	(5^+)	<3[i] fs	A D LM W Z	J^π: From (α,pγ) (1993O105), based on $\gamma(\theta)$ and Hauser-Feshbach calculations.
7469? *2*	1,2	55[i] fs *21*	L Q S W	J^π: From (α,pγ). 1559γ to 3^-.
7489 *5*	1^-[f]		G KLMN W	J^π: L=1 in (^{7}Li,t) and (t,p); natural parity.
7643.1 *13*	2^+	470[k] as *200*	D JKLM Q S X	J^π: L=2 in (^{7}Li,t); 7641γ E2 to 0^+.
7663.7 *9*	$(2)^-$		LM Q S	XREF: S(7630). J^π: L=1 in (d,p); also from (e,e′).
7722.0 *11*	3^-[f]		D JKLM Q X	J^π: L=3 (^{6}Li,d), (^{7}Li,t), and (t,p); natural parity.
7921 *2*	$(2)^+$[f]		D KLM Q S X	J^π: L=2 in (t,p); natural parity. J=3 in (^{13}C,d).
8076.9 *14*	$(4)^+$		D KLM Q	J^π: L=2 in (d,p); J=3 in (^{13}C,d); γ-ray transitions to 2^+, 4^+,(6^+).
8134.3 *4*	2^+[f]		D JKLM Q X	J^π: L=2 in (t,p); natural parity.
8162.2 *13*	2^+,3,4^+		LM S	J^π: γ's to 2^+ and 4^+.
8375.9 *16*	$(3)^-$		D KLM Q X	J^π: L=3 in (t,p); natural parity; γ transitions to 2^+, 4^+. But J=5 in (^{13}C,d).
8452 *7*			X	
8489.6 *12*	2^+		D KLM Q	XREF: M(8500). J^π: L=2 in (t,p).
8561.4[#] *19*	$(1,2)^+$	0.35[#] fs *13*	LM QR	J^π: L=2 in (d,p), γ to 0^+ and 1^-.
8573 *10*			X	
8596.0 *9*			D KLM Q S	
8741.0 *14*	$(3)^-$		D LM Q X	J^π: L=3 in (t,p); but J=5 in (^{13}C,d).
8855.3 *15*	$(4)^+$		D LM Q	J^π: L=2 in (d,p); γ transitions to $(3)^-$, $(6)^+$.
8900.3 *16*			D G L Q T	J^π: Reported as doublet of 1^- and $(4,5)^+$ in 1998En04.
8976 *3*			D J LM	
9045 *3*	$(2^+,3^-)$		LM Q X	J^π: γ's to 4^+, 1^-.
9097 *3*	$(1\ \text{to}\ 3)^-$		D J LM Q	J^π: L=1 in (d,p); possible γ-ray branch to 2^+ (1976Fi02).
9178 *3*	1^+	84[#] as *3*	RS	XREF: S(9140). E(level): Other values: 9165 *3* (1979Be10 – (γ,γ')), 9170 *4* (1976Fi02 – (α,pγ)), 9179 *10* (1974Fl07 – (t,p)). J^π: From (pol γ,γ).
9178.1 *7*	$(4)^+$		D J LM T	J^π: L=4 in (t,p); but J=5 in (^{13}C,d).
9229 *3*	2^+		J LM X	J^π: L=2 in (t,p); γ transitions to 1^-,2^- states.
9250 *3*			L	
9324 *2*			D L	
9508[@] *10*			D J LM	
9541 *10*	2^+		M	J^π: L=2 in (t,p).
9625 *12*	5		D J L	XREF: D(9640)L(9609). E(level): Average of data from (α,pγ), (^{6}Li,d), and (^{13}C,d).

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Adopted Levels, Gammas (continued)

^{22}Ne Levels (continued)

E(level)[†]	J^π	$T_{1/2}$[g]	XREF	Comments
				J^π: From (α,pγ) (1976Br06).
9654 *10*			D M	XREF: D(9630).
9725[&] *10*	(3^-)		J LM	XREF: L(9697). J^π: L=(3) in (^{7}Li,t).
9841[@] *10*	(2^+)		J LM	J^π: L=(2) in (^{7}Li,t).
10066[&] *10*	(0^+)		J M	J^π: L=(0) in (^{7}Li,t).
10137[&] *10*	2^+		J LM	J^π: L=2 in (t,p).
10208.5[a] *10*	1^-	<2[a] keV	G J LM R	J^π: L=1 in (^{6}Li,d), γ to 0^+.
10280.4[a] *10*	(0^+,1^-,2^+)	<2[a] keV	G J L	J^π: From (α,γ) angular distributions.
10294.8[a] *10*	(2^+)	<2[a] keV	G M	J^π: Suggested in 1994Gi01, 9018γ D to 2^+.
10384 *15*			J lM O	E(level): From (t,p). J^π: 6,8 in (α,pγ).
10416.4 *3*			J lM P	E(level): From (n,γ): res. J^π: 6,8 in (α,pγ).
10462.5 *5*	3^-		M P	E(level): From (n,γ): res. J^π: L=3 in (t,p).
10501.6 *3*	2^+		M P	E(level): From (n,γ): res. J^π: L=2 in (t,p).
10544.9 *4*	2^+		M P	E(level): From (n,γ): res. J^π: L=2 in (t,p).
10616[b] *3*	(5^-)	6 keV	GH J LM	J^π: From $\alpha\gamma$ angular distribution measurements (α,γ).
10696 *4*		<4[a] keV	G J	E(level): From (α,γ).
10706 *6*		<10[a] keV	GH M	XREF: M(10720). E(level): From (α,γ).
10749 *3*	5^-	6 keV	GH L	E(level): From (α,n). J^π: From (α,γ). Natural parity listed in 1990En08 Table 22.11.
10857[b] *3*	3^-	6 keV	GH J M	J^π: L=3 in (t,p).
10890 *10*	1^+		T	J^π: From $\sigma(\theta)$ and DWIA calculation in (p,p′).
10921[b] *3*	1^-	24 keV	GH M	J^π: L=1 in (t,p); γ transitions to 0^+, 2^+ states.
11032[a] *6*	(8^+,6^+)	<10[a] keV	GH J L Z	J^π: 8^+ in (α,pγ), (8^+,6^+) in (α,γ).
11064 *10*	2^+		M	J^π: L=2 in (t,p).
11130[a] *5*	6,7	<5[a] keV	G J L	J^π: From (α,pγ), angular correlation measurements.
11172			H	
11194[b] *3*		7 keV	GH M	
11269[b] *5*	2^+,3^+,4^+	12 keV	GH J M	J^π: From 1978Tr05 (α,γ) − based on $\alpha\gamma$ angular distribution measurements.
11323			H	
11431[b] *8*		48 keV	GH M	J^π: Natural parity in 1978Tr05 (α,γ).
11465[b] *3*	(1^-)	<3 keV	GH	J^π: From 1978Tr05,1970Ch18 (α,γ).
11522 *8*	7^-		GH LM	E(level): Weighted average of data 11533 *10* (1994Ma37) and 11520 *15* (1974Fl07) in (t,p), and 11482 *20* (α,pγ). J^π: From (α,pγ), angular correlation measurements. Natural parity listed in 1990En08 – Table 22.11.
11577 *5*		18 keV	GH M	E(level): From (α,n).
11656 *10*			M	
11686 *5*	(2^+)	9 keV	GH	E(level),J^π: From (α,γ).
11708 *15*	(2^+)[d]	5[d] keV	HI M	E(level): From (t,p).
11745		41 keV	G	

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Adopted Levels, Gammas (continued)

^{22}Ne Levels (continued)

E(level)[†]	J^π	$T_{1/2}$[g]	XREF	Comments
11751	1^-	8 keV	G	
11772[@] *10*	3^-		I M	J^π: L=3 in (t,p). Inconsistent with 1^- in (^{4}He,^{4}He′).
11892 *6*	1	10[d] keV	G I M ST	E(level): Weighted average of data from 11886 *10* (α,γ), 11907 *10* and 11895 *15* (t,p), and 11880 *10* (^{4}He,^{4}He′). J^π: 1^+ in (p,p′), 1^- in (^{4}He,^{4}He′) and (α,γ).
12000 *10*	1^+		T	
12020 *10*	0^+[d]	68[d] keV	I	
12071 *15*			M	
12218 *15*			M	
12250 *10*	0^+[d]	76[d] keV	I	
12280 *10*	1^-[d]	51[d] keV	G I	
12390 *10*	3^-	99[d] keV	I M	J^π: L=3 in (t,p), Inconsistent with 2^+ in (^{4}He,^{4}He′).
12450 *20*	$(0^+,1^-)$		M	J^π: L=0,1 in (t,p).
12570 *10*	(1^-)[d]	105[d] keV	I S	
12610 *10*	(2^+)[d]	124[d] keV	I	
12643 *15*			M	
12700 *10*	3^-[d]	15[d] keV	I	
12800 *10*	2^+[d]	50[d] keV	I	
12820 *10*	1^-[d]	170[d] keV	I	
12862 *15*	(3^-)	145[j] keV	I M	XREF: I(12840). J^π: L=(3) in (t,p). $J^\pi=1^-$ in (^{4}He,^{4}He′):res.
12900 *10*	3^-[d]	39[d] keV	I M	E(level): Average of data from (t,p) and (^{4}He,^{4}He′).
12990 *10*	0^+[d]	80[d] keV	I	
13030 *10*	2^+[d]	90[d] keV	I	
13078 *20*			M	
13190 *10*	3^-[d]	79[d] keV	I	
13210 *10*	0^+[d]	81[d] keV	I	
13274 *20*			M	
13392 *8*	3^-[d]	58[d] keV	I M	E(level): Average of data from (t,p) and (^{4}He,^{4}He′).
13460 *10*			T	
13490 *10*	4^+[d]	29[d] keV	I	
13540 *10*	0^+[d]	96[d] keV	I	
13570 *10*	3^-[d]	136[d] keV	I	
13650 *10*	(3^-)[d]	48[d] keV	I	
13670 *10*	(2^+)[d]	41[d] keV	I	
13690 *10*	(5^-)[d]	50[d] keV	I	
13730 *10*	4^+[d]	57[d] keV	I	
13820 *10*	(2^+)[d]	51[d] keV	I	
13880 *10*	4^+[d]	46[d] keV	I T	XREF: T(13890).
14060 *20*			T	
14470			E	
15580 *40*			T	
16510 *10*			T	
17.00×10^3 *10*			F	
17.48×10^3 *10*			E	
18.43×10^3 *10*		≈330[h] keV	EF	E(level): Average of data from (^{18}O,^{8}Be),^{14}C(^{18}O,^{10}Be) and (^{12}C,α).
19280 *20*	(7^-)[d]	88[d] keV	F I	XREF: F(19130).

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Adopted Levels, Gammas (continued)

^{22}Ne Levels (continued)

E(level)[†]	J^π	$T_{1/2}$[g]	XREF	Comments
19.45×10^3 *10*	(6$^+$)		E	J$^\pi$: Based on α-α angular distribution measurements (2006Yi01).
19560 *20*	(7$^-$)[d]	75[d] keV	I	
19.89×10^3 *10*	(10$^+$)		E	J$^\pi$: Based on α-α angular distribution measurements (2006Yi01).
20.00×10^3 *10*	(9$^-$)[e]	≈270 keV	F	
20.70×10^3 *10*	(11$^-$)[d]	≈340[d] keV	F	
20850 *20*	(9$^-$)[d]	110[d] keV	I	
21840 *20*	(9$^-$)[d]	170[d] keV	EF I	XREF: F(21600). E(level): From (^{4}He,^{4}He′):res. Γ − Other value: ∼ 350 keV (^{12}C,α).
22.20×10^3 *10*	(12$^+$)[e]	≈250[h] keV	F	
22.90×10^3 *10*		≈290[h] keV	F	
24.14×10^3 *20*			F I	XREF: F(24000).
25.00×10^3 *10*	(9$^-$)[e]	≈350[h] keV	F	
25.90×10^3 *10*			F	
26.89×10^3 *20*			F I	XREF: F(27000).

† From ^{19}F(α,pγ), except otherwise noted.
‡ From ^{22}F β^- decay.
# From (γ,γ').
@ From (t,p).
& Average of data from (t,p) and (^{6}Li,d). Uncertainty − lowest experimental value.
a From (α,γ).
b Weighted average of data from (α,γ) and (α,n). Uncertainty − lowest experimental value.
c Identified as member of a rotational band based on 0$^+$ g.s. in 1976Fi02 (α,pγ).
d From ^{18}O(^{4}He,^{4}He′):res. J^π assignments are based on double differential cross section measurements and fitting.
e From (^{12}C,α). J^π assignments are based on the analysis of double (α,α) angular correlations with the residual ^{18}O nucleus in the 0$^+$ ground state.
f Natural/Unnatural parity quoted in comment column from 1971Ol01 − σ(180°) (α,α').
g Γ_0 values from (α,n):res, except otherwise noted.
h From (^{12}C,α).
i From 1993Ol05 (α,pγ).
j From (^{4}He,^{4}He′):Re.
k From (e,e′).

γ(^{22}Ne)

E_i(level)	J^π_i	E_γ[†]	I_γ[@]	E_f	J^π_f	Mult.[@]	δ[@b]	Comments
1274.537	2$^+$	1274.537 *7*	100	0.0	0$^+$	E2		B(E2)(W.u.)=12.76 *18* E_γ,Mult.: From ^{22}Na β^+ decay.
3357.2	4$^+$	2082.6[‡] *5*	100	1274.537	2$^+$	E2		B(E2)(W.u.)=17.5 *4*
4456.2	2$^+$	1099[#]		3357.2	4$^+$			
		3181.4	100.0 *21*	1274.537	2$^+$	M1+E2	+0.09 *2*	B(M1)(W.u.)=0.18 *12*; B(E2)(W.u.)=1.0 *8* δ: Average of +0.11 *3* (1994Br11 − also

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Adopted Levels, Gammas (continued)

$\gamma(^{22}Ne)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[@]	E_f	J^π_f	Mult.[@]	δ[@b]	Comments
								possibility of a large value), +0.08 *2* (1967Bu01).
4456.2	2^+	4455.7	3.1 *21*	0.0	0^+	E2		B(E2)(W.u.)=0.7 *5*
5146.0	2^-	689.8	89[a] *6*	4456.2	2^+	E1+M2	−0.29 *2*	B(E1)(W.u.)=0.0014 *4*; B(M2)(W.u.)=1.2×10^3 *4* δ: Other value: +0.04 *8* (1967Bu01).
		3871.1	100[a] *6*	1274.537	2^+	E1+M2	+0.96 *18*	B(E1)(W.u.)=5.1×10^{-6} *17*; B(M2)(W.u.)=1.4 *5* δ: Other value: +0.10 *10* 1972Ho52.
5329.6	1^+	4054.6	50 *12*	1274.537	2^+	M1+E2	+1.9 *5*	B(M1)(W.u.)=0.020 *11*; B(E2)(W.u.)=31 *12* δ: Weighted average of −1.7 *10* (1972Ho52) and −2.0 *6* (1993Ol05).
		5328.9	100 *12*	0.0	0^+	[M1]		B(M1)(W.u.)=0.081 *25*
5363.4	2^+	4088.4	100 *4*	1274.537	2^+	M1+E2	−0.19 *4*	B(M1)(W.u.)=0.0039 *8*; B(E2)(W.u.)=0.06 *3* δ: Weighted average of −0.12 *6* (1993Ol05), −0.25 *8* (1968Ku05), and −0.27 *8* (1976Fi02).
		5362.7	16 *4*	0.0	0^+	[E2]		B(E2)(W.u.)=0.070 *22*
5523.3	$(4)^+$	2166.1[‡] *5*	100.0[‡] *6*	3357.2	4^+	M1		B(M1)(W.u.)=0.102 *15* δ: −0.04 *3* (1993Ol05) and −0.07 *12* (1968Ku05) both in (α,pγ)).
		4247.9[‡] *10*	1.6[‡] *3*	1274.537	2^+	E2		B(E2)(W.u.)=0.084 *20*
5641.2	3^+	2283.9[‡] *7*	45[‡] *3*	3357.2	4^+	M1(+E2)	−0.12 *17*	B(M1)(W.u.)>0.18 I_γ: Other value: 30 *4* in (t,pγ). δ: From 1968Ku05 (α,pγ).
		4366.1[‡] *10*	100[‡] *3*	1274.537	2^+	M1+E2	+0.15 *2*	B(M1)(W.u.)>0.059; B(E2)(W.u.)>0.36 δ: Weighted average of +0.18 *3* (1968Ku05), +0.19 *4* (1967Bu01), +0.13 *3* (1972Ho52), and +0.16 *3* (1976Br06).
5910.1	3^-	1453.8	21 *6*	4456.2	2^+	E1(+M2)	+0.19 *10*	B(E1)(W.u.)=(0.0013 *6*); B(M2)(W.u.)=(1.0×10^2 *5*)
		2552.7	21 *6*	3357.2	4^+			
		4635.0	100 *6*	1274.537	2^+	E1+M2	+0.17 *6*	B(E1)(W.u.)=0.00019 *7*; B(M2)(W.u.)=1.1 *9* δ: Other value: 0.02 *2* (1976Br06).
6119.9	2^+	1663.6	10.3[a] *13*	4456.2	2^+	M1+E2	+1.1 *3*	B(M1)(W.u.)=0.012 *8*; B(E2)(W.u.)=38 *22*
		4844.8	100[a] *4*	1274.537	2^+	M1+E2	+2.3 *3*	B(M1)(W.u.)=0.0017 *10*; B(E2)(W.u.)=2.7 *14* δ: also an alternate value: −0.11 *4* (1993Ol05).
		6119.0	18[a] *3*	0.0	0^+	E2		B(E2)(W.u.)=0.18 *10* Mult.: From (e,e′) based on B(E2).
6235	0^+	905	100	5329.6	1^+			
6311.0	(6^+)	2953.6	100	3357.2	4^+	[E2]		B(E2)(W.u.)=14.0 *12*
6345.1	4^+	2987.7[‡] *9*	100	3357.2	4^+	M1+E2	+0.68 *16*	B(M1)(W.u.)=0.043 *12*; B(E2)(W.u.)=16 *7*
6635.8	$(3,4)^+$	3278.3	89 *6*	3357.2	4^+	M1+E2	−0.9 *3*	B(M1)(W.u.)=0.0033 *18*; B(E2)(W.u.)=1.8 *10*
		5360.6	100 *6*	1274.537	2^+			
6689.0	1^-	5413.7	45 *9*	1274.537	2^+	[E1]		B(E1)(W.u.)=7.E−6 *4*
		6687.9	100 *9*	0.0	0^+	(E1)		B(E1)(W.u.)=8.E−6 *5*

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Adopted Levels, Gammas (continued)

$\gamma(^{22}Ne)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[@]	E_f	J^π_f	Mult.[@]	δ[@b]	Comments
6819.4	2^+	1455.9	43 *16*	5363.4	2^+			
		1673.3	57 *16*	5146.0	2^-			
		2363.1	100 *16*	4456.2	2^+	M1+E2	+2.5 *4*	B(M1)(W.u.)>0.021; B(E2)(W.u.)>2.1×10^2
		5544.1	70 *16*	1274.537	2^+	M1		B(M1)(W.u.)>0.011 δ: +0.10 *10* 1993Ol05 (α,pγ).
6853.5	(1^+)	5578.2	85 *8*	1274.537	2^+	M1+E2	+1.3 *5*	B(M1)(W.u.)=0.06 *4*; B(E2)(W.u.)=22 *12*
		6852.3	100 *8*	0.0	0^+	M1		B(M1)(W.u.)=0.10 *5*
6900	0^+	5624.7	100	1274.537	2^+	E2		B(E2)(W.u.)=0.36 *4*
7051	1^-	5776	100.0[a] *11*	1274.537	2^+	[E1]		B(E1)(W.u.)=4.1×10^{-5} *13*
		7050	9.9[a] *11*	0.0	0^+	[E1]		B(E1)(W.u.)=2.2×10^{-6} *7*
7341.1	0^+	2011.4	100 *8*	5329.6	1^+	(M1)		B(M1)(W.u.)>0.51
		2884.7	75 *8*	4456.2	2^+	(E2)		B(E2)(W.u.)>1.1×10^2
7341.2	$(4)^+$	1430.9	100 *6*	5910.1	3^-			E_γ: γ-ray not seen in ^{22}F β^- decay. I_γ from (α,pγ).
		3983.5[‡] *10*	96 *6*	3357.2	4^+	M1+E2	−0.7 *3*	B(M1)(W.u.)=0.0033 *22*; B(E2)(W.u.)=0.7 *6*
7405.9	$(3)^-$	2259.8	100 *3*	5146.0	2^-	M1+E2	+1.3 *4*	B(M1)(W.u.)=0.014 *7*; B(E2)(W.u.)=33 *13*
		6130.4	56 *3*	1274.537	2^+	E1		B(E1)(W.u.)=4.2×10^{-5} *14*
7423.0	(5^+)	1900.0[‡] *6*	100	5523.3	$(4)^+$			
7469?	1,2	1559	100	5910.1	3^-			
7489	1^-	1369	10 *6*	6119.9	2^+			
		2125	10 *6*	5363.4	2^+			
		6213	23 *6*	1274.537	2^+			
		7487	100 *6*	0.0	0^+	E1		
7643.1	2^+	3186.7	42 *5*	4456.2	2^+			
		6367.6	100 *5*	1274.537	2^+	M1+E2	−0.08 *5*	δ: From 1976Fi02.
		7641.7	12 *5*	0.0	0^+	E2		
7663.7	$(2)^-$	1428.7	100	6235	0^+			
7722.0	3^-	1602.0	19 *16*	6119.9	2^+			
		2198.6	25 *16*	5523.3	$(4)^+$			
		2575.8	22 *16*	5146.0	2^-			
		3265.5	100 *16*	4456.2	2^+			
		4364.3	78 *16*	3357.2	4^+			
		6446.5	69 *16*	1274.537	2^+			
7921	$(2)^+$	580	20 *15*	7341.2	$(4)^+$			
		1102	29 *15*	6819.4	2^+			
		2398	33 *15*	5523.3	$(4)^+$			
		6645	100 *15*	1274.537	2^+			
8076.9	$(4)^+$	1765.8	50 *22*	6311.0	(6^+)			
		2713.3	36 *22*	5363.4	2^+			
		4719.1	100 *22*	3357.2	4^+			
		6801.2	92 *22*	1274.537	2^+			
8134.3	2^+	1314.9	8 *3*	6819.4	2^+			
		6858.6	100 *3*	1274.537	2^+	M1+E2	−0.48 *5*	I_γ: From 1976Fi02 (α,pγ).
8162.2	2^+,3,4^+	1342.8	8 *8*	6819.4	2^+			
		4804.4	44 *8*	3357.2	4^+			
		6886.5	100 *8*	1274.537	2^+			
8375.9	$(3)^-$	712.2	8 *7*	7663.7	$(2)^-$			
		5018.1	100 *7*	3357.2	4^+			
		7100.1	28 *7*	1274.537	2^+			
8489.6	2^+	412.7	32 *32*	8076.9	$(4)^+$			
		1148.4	100 *32*	7341.2	$(4)^+$			
		2254.5	82 *32*	6235	0^+			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{22}Ne)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[@]	E_f	J^π_f	Mult.[@]	Comments
8489.6	2^+	2848.2	71 *32*	5641.2	3^+		
		5131.8	71 *32*	3357.2	4^+		
8561.4	$(1,2)^+$	1872.3	72 *12*	6689.0	1^-		
		8559.6	100 *12*	0.0	0^+		
8596.0		519.1	100 *6*	8076.9	$(4)^+$		
		3449.7	20 *6*	5146.0	2^-		
8741.0	$(3)^-$	1399.6	19 *12*	7341.2	$(4)^+$		
		1689.9	28 *12*	7051	1^-		
		4284.3	100 *12*	4456.2	2^+		
		5383.1	28 *12*	3357.2	4^+		
8855.3	$(4)^+$	1449.3	39 *10*	7405.9	$(3)^-$		
		2544.1	100 *10*	6311.0	(6^+)		
8900.3		1477.2	54 *33*	7423.0	(5^+)		
		1559.0	100 *33*	7341.2	$(4)^+$		
		2211.2	71 *33*	6689.0	1^-		
		2589.1	79 *33*	6311.0	(6^+)		
		3258.8	54 *33*	5641.2	3^+		
		3536.6	58 *33*	5363.4	2^+		
8976		1312	56 *11*	7663.7	$(2)^-$		
		1925	100 *11*	7051	1^-		
9045	$(2^+,3^-)$	1402	71 *24*	7643.1	2^+		
		1994	92 *24*	7051	1^-		
		5687	100 *24*	3357.2	4^+		
9178	1^+	9176	100	0.0	0^+		E_γ: placement in (γ,γ).
9178.1	$(4)^+$	3267.6	64 *11*	5910.1	3^-		
		4721.3	25 *11*	4456.2	2^+		
		5819.9	100 *11*	3357.2	4^+		
9229	2^+	1565	79 *9*	7663.7	$(2)^-$		
		2178	100 *9*	7051	1^-		
9250		1528	100 *11*	7722.0	3^-		
		3130	56 *11*	6119.9	2^+		
9324		1602	100	7722.0	3^-		
9625	5	3314	45	6311.0	(6^+)		
		6267	100	3357.2	4^+		
10208.5	1^-	8932.0	25[&] *6*	1274.537	2^+		
		10206.0	100[&] *6*	0.0	0^+	E1	
10280.4	$(0^+,1^-,2^+)$	2791.2	23[&] *7*	7489	1^-		
		3426.6	45[&] *9*	6853.5	(1^+)		
		4950.2	100[&] *12*	5329.6	1^+		
		5823.4	2[&] *1*	4456.2	2^+		
		9003.9	57[&] *12*	1274.537	2^+		
10294.8	(2^+)	2805.6	19[&] *5*	7489	1^-		
		3441.0	16[&] *5*	6853.5	(1^+)		
		4964.6	30[&] *7*	5329.6	1^+		
		5837.8	11[&] *4*	4456.2	2^+		
		9018.3	100[&] *12*	1274.537	2^+	D	δ: 0.04 *5* in (α,γ).
10416.4		4071		6345.1	4^+		
10616	(5^-)	4270	100[&] *8*	6345.1	4^+		
		7258	52[&] *8*	3357.2	4^+		
10696		7337	100	3357.2	4^+		
10706		9429	100	1274.537	2^+		
10749	5^-	4437	100[&] *10*	6311.0	(6^+)		

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{22}Ne)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[@]	E_f	J^π_f
10749	5^-	7390	92[&] *10*	3357.2	4^+
10857	3^-	9580	100	1274.537	2^+
10921	1^-	9644	100[&] *9*	1274.537	2^+
		10918	79[&] *9*	0.0	0^+
11032	$(8^+,6^+)$	4721[#]		6311.0	(6^+)
11130	6,7	4818	100	6311.0	(6^+)
11194		2294	100[&] *4*	8900.3	
		9917	18[&] *4*	1274.537	2^+
11269	$2^+,3^+,4^+$	6122	100[&] *15*	5146.0	2^-
		7910	81[&] *15*	3357.2	4^+
11431		10154	100	1274.537	2^+
11465	(1^-)	6320	100[&] *4*	5146.0	2^-
		10190	33[&] *4*	1274.537	2^+
		11464	49[&] *4*	0.0	0^+
11522	7^-	5221	100	6311.0	(6^+)

† From level energy difference, recoil energy subtracted, except otherwise noted.
‡ From ^{22}F β^- decay, except otherwise noted.
\# Placement from $(^{26}Mg,^{22}Ne\gamma)$.
@ From 1993Ol05 $(\alpha,p\gamma)$, except otherwise noted.
& From (α,γ).
a From $(t,p\gamma)$.
b From $(\alpha,p\gamma)$, except otherwise noted.

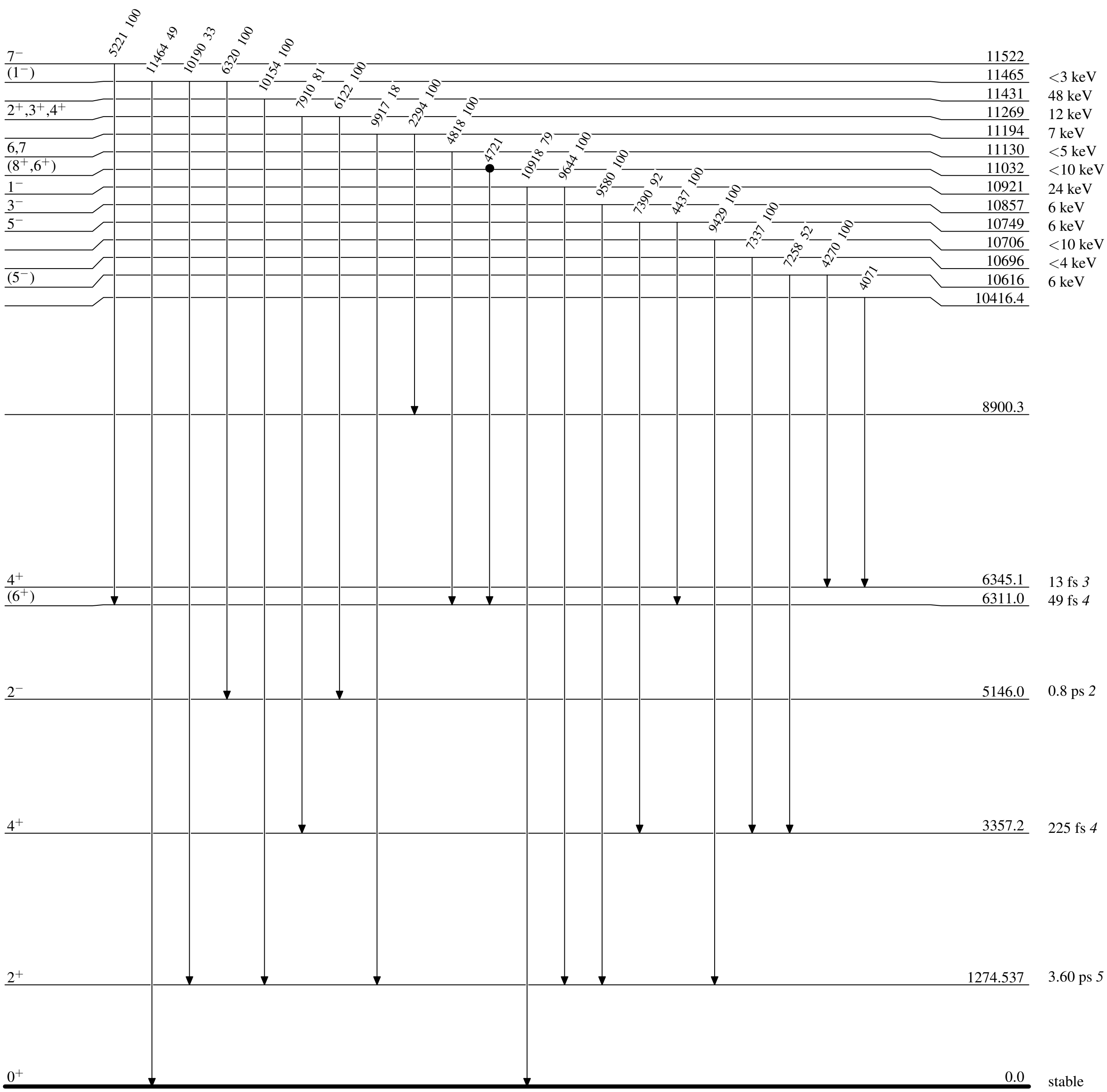
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

● Coincidence

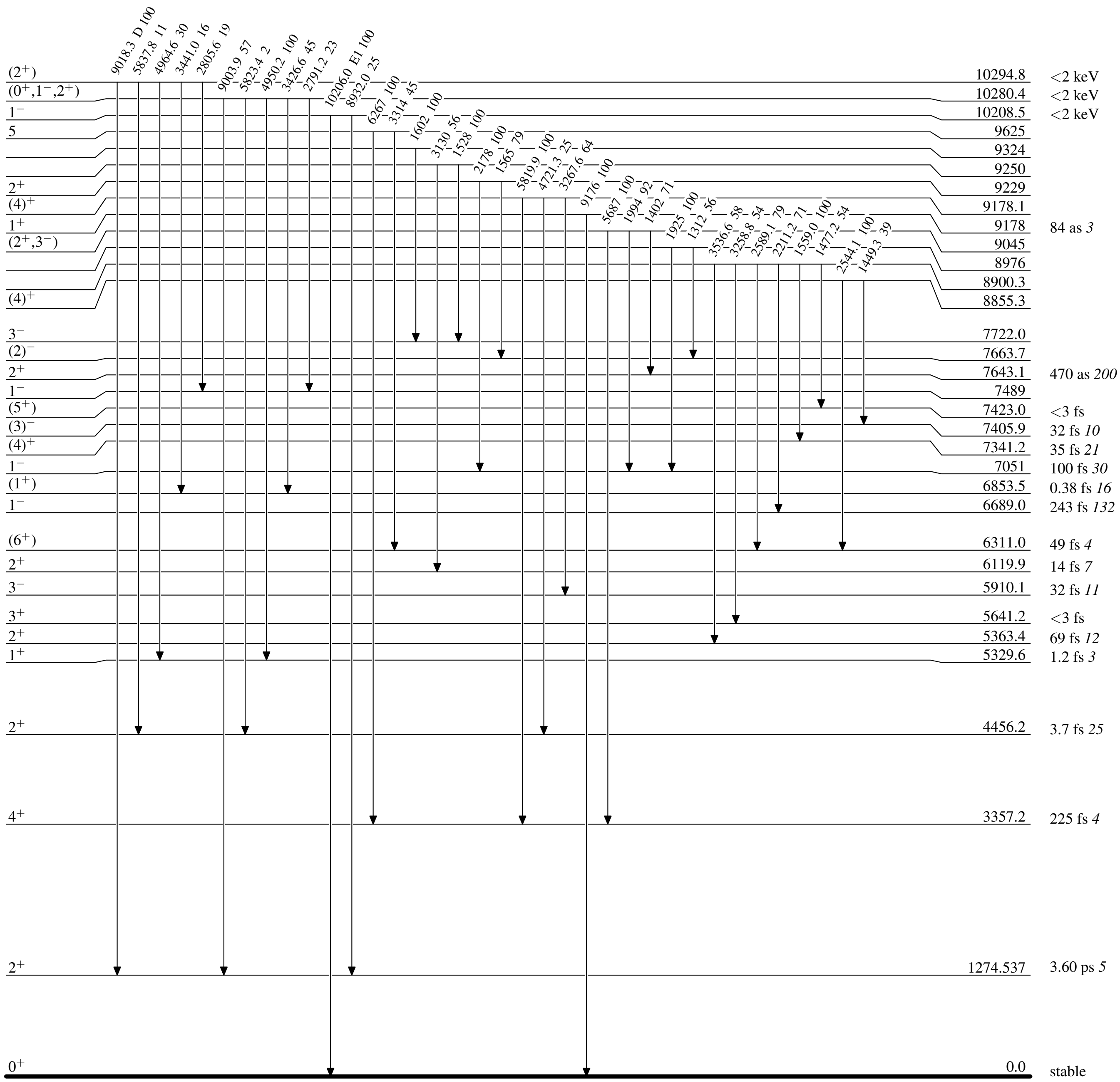


$^{22}_{10}Ne_{12}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

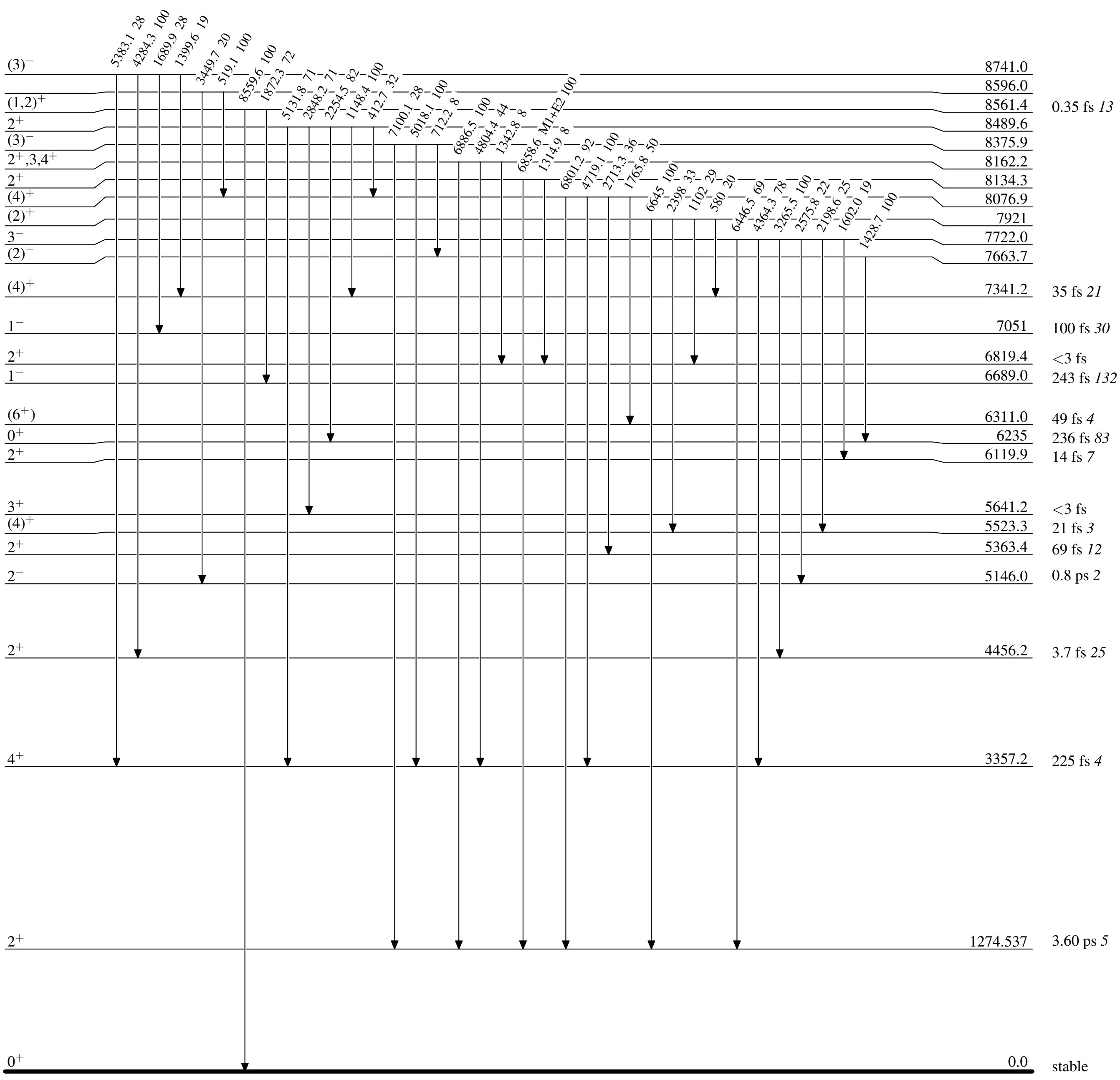


$^{22}_{10}Ne_{12}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

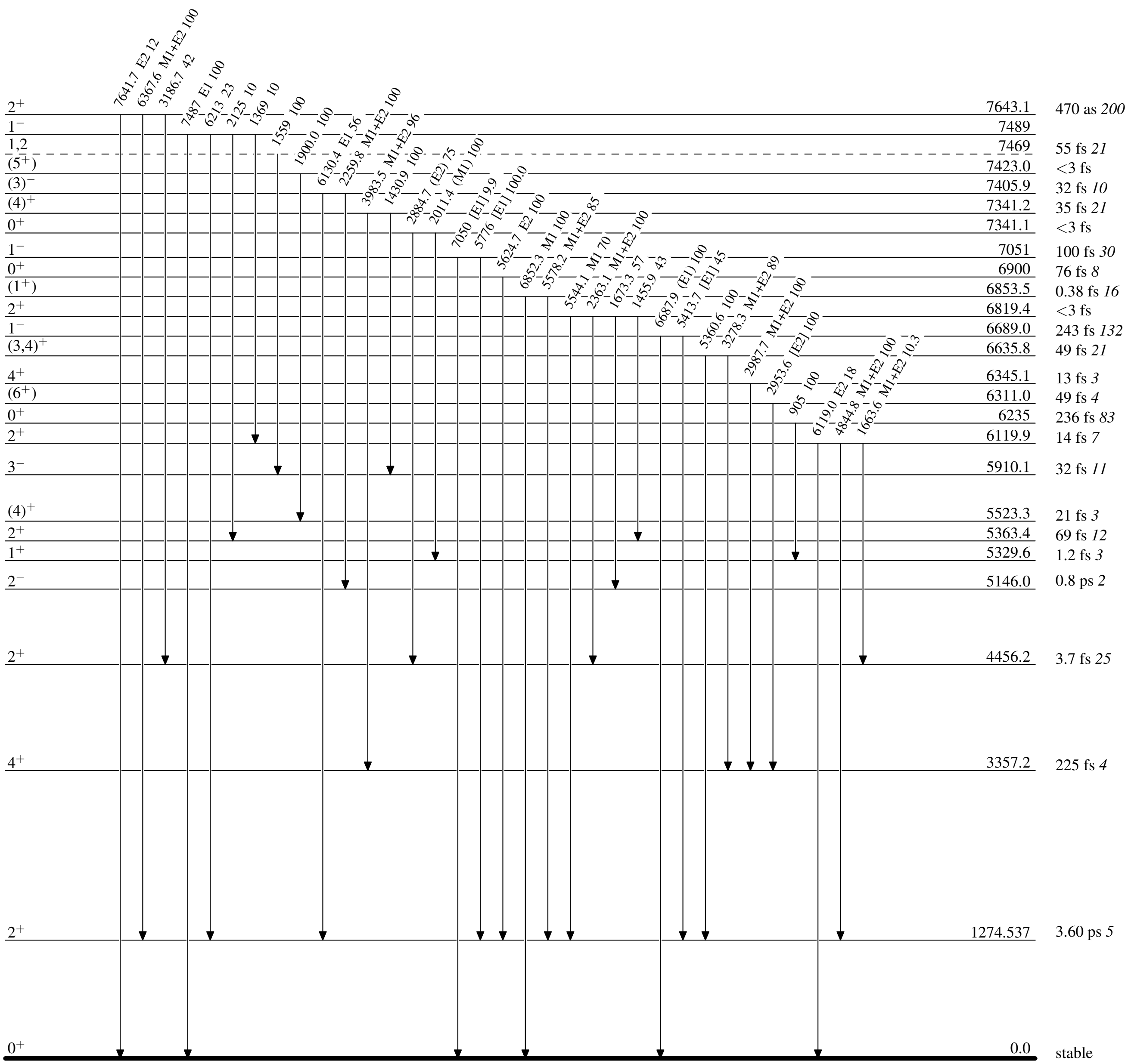


$^{22}_{10}Ne_{12}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

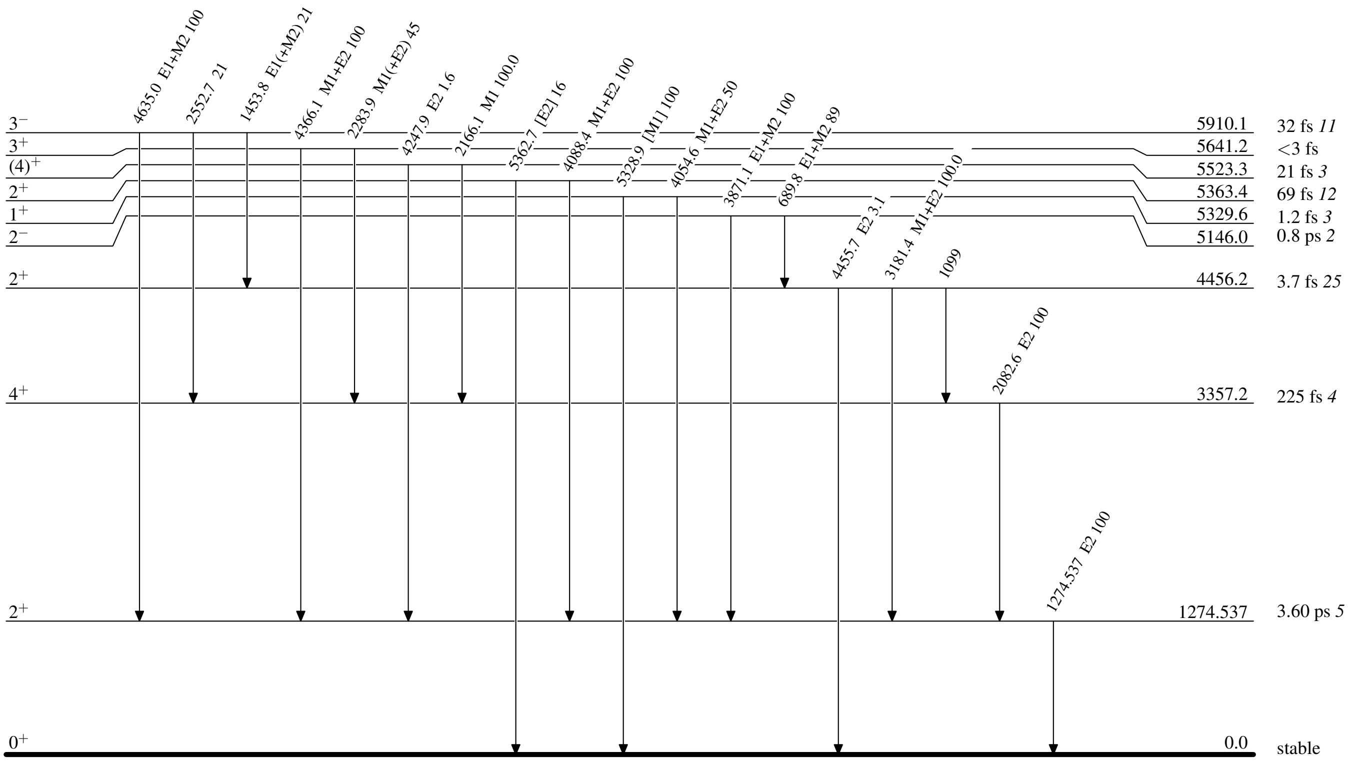


$^{22}_{10}Ne_{12}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{22}_{10}Ne_{12}$