#### Adopted Levels, Gammas 1998Ti06

History	

Туре	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

 $Q(\beta^-) = -13892.5 \ 12; \ S(n) = 16865.30 \ 16; \ S(p) = 1.284 \times 10^4; \ Q(\alpha) = -4730$  2012Wa38

Note: Current evaluation has used the following Q record.

 $Q(\beta^{-})=-13886\ 7;\ S(n)=16864.4\ 6;\ S(p)=12843.50\ 7;\ Q(\alpha)=-4729.84\ 1$  1997Au04

See other reaction references in 1998Ti06.

## <sup>20</sup>Ne Lev<u>els</u>

#### Cross Reference (XREF) Flags

Α	$^{20}$ F $\beta^-$ decay	E	$^{16}O(\alpha,\alpha)$ , $^{16}O(\alpha,2\alpha)$	Ι	$^{19}$ F(p, $\gamma$ )
В	$^{20}$ Na $\beta^+$ decay	F	$^{16}O(^{6}Li,d)$	J	$^{19}F(p,p),  ^{19}F(p,d)$
C	$^{12}\text{C}(^{12}\text{C},\alpha)$	G	$^{16}O(^{7}Li,t)$	K	$^{19}$ F(p, $\alpha$ )
D	$^{16}\Omega(\alpha, \gamma)$	н	$^{16}O(^{12}C^{8}Be)$		

E(level)	${ m J}^\pi$	$T_{1/2}$	XREF	Comments
0.0	0+	stable	ABCD FGHI	T=0
1633.674 <i>15</i>	2+	0.73 ps 4	ABCD FGHI	$\mu$ =+1.08 8 (1989Ra17); Q=-0.23 3 (1989Ra17); T=0
4247.7 11	4+	$64 \text{ fs } \hat{6}$	ABCD FGH	$\mu$ =+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 <i>35</i>	A CD F	%IT=7 3; %α=93 3
				$\Gamma_{\gamma} = 2.4 \times 10^{-4} \text{ eV } 6; \text{ T} = 0$
5787.7 26	1-	0.028 keV 3	A CDEFGH	$\%$ IT=0.016 3; $\%\alpha$ =100
				$\Gamma_{\gamma} = 4.6 \times 10^{-3} \text{ eV } 8; \text{ T} = 0$
6706 <i>47</i>			В	T=0
6725 5	$0_{+}$	19.0 keV 9	A DEF	$%IT=1.7\times10^{-4}; \%\alpha=100$
				$\Gamma_{\gamma} = 0.033 \text{ eV}; T = 0$
7004.0 <i>36</i>	4-	305 fs 62	A C F	T=0
7156.3 5	3-	8.2 keV <i>3</i>	C EFGH	$%IT=2.0\times10^{-5} 2; \%\alpha=100$
				$\Gamma_{\gamma} = 16.1 \times 10^{-4} \text{ eV } 15; \text{ T} = 0$
7191 <i>3</i>	$0_{+}$	3.4 keV 2	CDE	$%IT=1.29\times10^{-4} 25; \%\alpha=100$
				$\Gamma_{\gamma} = 4.4 \times 10^{-3} \text{ eV } 8; \text{ T} = 0$
7421.9 12	2+	15.1 keV 7	BCDEF	$\%IT=1.9\times10^{-4} 3; \%\alpha=100$
				$\Gamma_{\gamma} = 0.029 \text{ eV } 4; \text{ T} = 0$
7833.4 <i>15</i>	2+	2 keV	BCDE	$%IT=3.4\times10^{-3}; \%\alpha=100$
				$\Gamma_{\gamma} = 0.069 \text{ eV } 7; \text{ T} = 0$
8453 <i>4</i>	5-	0.013 keV 4	CDEF	%IT=0.10 4; %α=99.90 4
	- 1			$\Gamma_{\gamma} = 0.013 \text{ eV } 3; \text{ T} = 0$
≈8700	$0_{+}$	>800 keV	E	$%\alpha=100$
0700 7	1 -	211 77 0	CD.F.	T=0
8708 7	1-	2.1 keV 8	CDE	$\%IT=3.3\times10^{-3}$ 15; $\%\alpha=100$
9777 6 22	6+	0.11 lcsV 2	CDEECH	$\Gamma_{\gamma}$ =0.070 eV 17; T=0
8777.6 22	0	0.11 keV 2	CDEFGH	%IT=0.091 21; $%\alpha$ =100 $\Gamma_{\gamma}$ =0.100 eV 15; T=0
8820	$(5^{-})$	<1 keV	E	$6\pi$ $\alpha$ = 100
0020	(5)	<1 KC V	-	T=0
8854 5	1-	19 keV	СЕ	$\%\alpha=100$
	_			T=0
$90.0 \times 10^2 18$	2+	≈800 keV	E	$\%\alpha$ =?
				T=0
9031 7	4+	3 keV	CDE	%IT=0.011; $%\alpha$ =100
				$\Gamma_{\gamma} = 0.34 \text{ eV } 4; \text{ T} = 0$
9116 <i>3</i>	3-	3.2 keV	CDE	$\%IT = 8 \times 10^{-4}; \%\alpha = 100$

E(level)	$\mathrm{J}^\pi$	$T_{1/2}$	XREF	Comments
				$\Gamma_{\gamma}$ =0.026 eV 3; T=0
9196 <i>30</i>	2+		В	T=0
9318 2	$(2^{-})$		CD	T=0
9487 5	2+	29 keV <i>15</i>	B DE	%IT=9×10 <sup>-4</sup> 6; %α=100 $\Gamma_{\gamma}$ =0.26 eV 10; T=0
9873 <i>4</i>	3 <sup>+</sup>		BC	$\Gamma_{\gamma}^{\prime}/\Gamma = 0.82\ 27;\ T = 0$
9935 12	$(1^{+})$	<24.3 fs	C	T=0
9990 8	4+	155 keV <i>30</i>	CDE	%IT= $6 \times 10^{-4} \ 3$ ; % $\alpha = 100$ $\Gamma_{\gamma} = 0.9 \ \text{eV} \ 4$ ; T= $0$
10262 5	5-	145 keV 40	C EFGH	$\%\alpha = 100$ T=0
10273.2 19	2+	≤0.3 keV	B DE	%IT=?; %α=? $\Gamma_{\gamma}$ =4.6 eV 5; T=1
10406 5	3-	80 keV	C E	$\%\alpha$ =100 T=0
10553 5	4+	16 keV	CE	$\%\alpha$ =100 T=0
10584 5	2+	24 keV	ВЕ	$\%\alpha = 100$
103013	_	21 Ke v	2 2	T=0
10609 <i>6</i>	6-	16 fs 5	С	T=0
10694 <i>6</i>	$4^{-},3^{+}$		C	T=0
10800 75	4+	350 keV	EF	$% \alpha = 100$
10840 6	3-	45 keV	C E	$T=0$ % $IT=?$ ; % $\alpha=?$ $T=0$
10843 4	2+	13 keV	В Е	$\%\alpha$ =100 T=0
10884 <i>3</i>	3 <sup>+</sup>	<21 fs	В	$\Gamma_{\gamma}/\Gamma < 0.3$ ; T=1
10917 6	3 <sup>+</sup>	<b>\21</b> 13	C	T=0
10940 9	2+		В	1-0
$109.7 \times 10^2 \ 12$	0+	580 keV		$%\alpha=100$
			Е	T=0
11020 8	4+	24 keV	C E	$\%\alpha$ =100 T=0
11090 3	4 <sup>+</sup>	≤0.5 keV	DE	%IT=?; % $\alpha$ =? $\Gamma_{\gamma}$ =0.34 eV 4; T=1
11116 9	2+		В	, ,
11240 23	1-	175 keV	E	$\%\alpha=100$
				T=0
11262.3 <i>19</i>	1+		B D	T=1
11270 5	1-	≤0.3 keV	DE	%IT=?; % $\alpha$ =? $\Gamma_{\gamma}$ =0.71 eV 6; T=1
11320 9	2+	40 keV 10	ВЕ	$\%\alpha = 100$ T=0
11528 6	$3^{+},4^{-}$	≤21 fs	С	T=0
11555 6	$(3^+)$		Č	T=0
11558 4	0+	1.1 keV 4	DE	$\%$ IT=?; $\%\alpha$ =? T=0
11601 <i>10</i>	2-			T=0 T=1 Decay mode not specified.
11653 <i>5</i> 11885 <i>7</i>	$(3^+)$ $2^+$	46 keV	C B E	T=0 %IT=?; $%\alpha$ =?
11005 /	2	IO AC T	<i>D</i> <u>L</u>	T=0
11928 4	4+	0.44 keV 15	DE	%IT= $6 \times 10^{-3}$ 3; % $\alpha$ =100 $\Gamma_{\gamma}$ =0.026 eV 6; T=0
11951 4	8+	0.035 keV 10	CDEFGH	$\%\text{IT}=0.022\ 7;\ \%\alpha=100$

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

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

E(level)	${ m J}^{\pi}$	T <sub>1/2</sub>	XREF		Comments
					T=0
14455 <i>3</i>	$(0^+,2^+)$	33 keV <i>3</i>	E	JK	%p=?; % $\alpha$ =? T=0
14475 6	$0^{+}$	68 keV 2		JK	%p=?; %α=?
14593 10	4+	260 keV 25	E		$\%\alpha$ =100
14597 7	1-	116 keV 5	E	K	T=0 %p=?; $%\alpha$ =? T=0
14653 10	$(0^+)$	25 keV	:	JK	%p=?; %α=?
14699.0 <i>33</i>	$(1^{+})$	36 keV 10	E	JK	%p=?; %α=?
14731 <i>10</i>	$(4^{+})$	60 keV 25	E		$\%\alpha=100$
14761 5	6 <sup>+</sup>	7.3 keV 48	E		T=0 %α=100 T=0
14776 <i>4</i>	$(1^{-})$	110 keV 20	-	JK	%p=?; %α=?
14807 5	6+	86 keV 7	E	K	$\%\alpha=100$
11007 5	O	00 Re v 7	_	•	T=0
14816 5	5-	117 keV <i>13</i>	E		$\%\alpha$ =100
					T=0
14839 <i>10</i>	$(4^{+})$	79 keV <i>15</i>	E		$\%\alpha=100$ T=0
14888 10	2+	100 keV 30	E	v	$\%$ p=?; $\%\alpha$ =?
14000 10	2	100 KEV 30	E	K	T=0
15047 10	2+	66 keV 20	CE	K	%p=?; % $\alpha$ =? T=0
15073 10	5-	160 keV 25	E		$\%\alpha = 100$ T=0
15142 <i>15</i>	$(2^{+})$	≈60 keV	E		$\%\alpha=100$
15159 5	6 <sup>+</sup>	60 keV 15	С		$T=0$ $\%\alpha=?$
13137 3	O	00 Ke v 15			T=0
15174 <i>10</i>	5-	230 keV 25	E		%α=100 T=0
15230		28 keV			%p=?; %α=?
15270	$(1^{-})$	285 keV	C EFGH		$\%$ p=?; $\%\alpha$ =?
15330 5	4+	34 keV 10	C E		$\%\alpha=100$
					T=0
15346 <i>15</i>	6+		E		T=0
15366 <i>5</i>	7-	110 keV 10	EFGH		$\%\alpha$ =100
					T=0
15436 <i>15</i>	(3-)	90 keV 20	CE	K	%p=?; % $\alpha$ =? T=0
15500		55 keV	E	K	~ ~ ~
15700 15	(8-)	33 Re v	CE	•	$\%\alpha=100$
10,00 10	(0 )		<b>0</b>		T=0
15874 9	8+	100 keV 15	C F H		$\%\alpha=100$
15970	$(6^+)$		E		$\%\alpha=100$
	` /				T=0
16010 25	(2+)	100 keV		K	%p=?; $%\alpha$ =? T=(1)
16139 <i>15</i>		38 keV	CE	K	$%\alpha=100$
16250			E		$\%\alpha$ =100
16329 <i>11</i>	4+	45 keV	E	K	%p=?; % $\alpha$ =? T=0
16437 <i>11</i>	$(0,2,4)^+$	35 keV	E		$\%\alpha=100$
	(~, <del>~</del> , ·)	,	-		T=0

E(level)	$J^{\pi}$	T <sub>1/2</sub>	XREF	Comments
16505 <i>15</i>	6+	24 keV <i>4</i>	E	$\%\alpha$ =100 T=0
16559 <i>15</i>	5-	90 keV <i>30</i>	E	$\%\alpha=100$ T=0
16581 <i>15</i>	7-	92 keV 8	CE	$\%\alpha=100$ T=0
16628 20	3-	80 keV 25	E	60 $60$ $60$ $60$ $60$ $60$ $60$ $60$
16630 20	$(7^{-})$		FGH	$\%\alpha = 100$
16667 <i>15</i>	( <i>i</i> )	100 keV 25	E	$\%\alpha=100$
10007 13	7	100 KC V 23	_	T=0
16717 <i>15</i>	5-	≈25 keV	CE	$\%\alpha=100$ T=0
16732.9 27	0+	2.0 keV 5	IJK	$\%$ IT=?; $\%$ p=?; $\%\alpha$ =? T=2
16746 25	8+	160 keV 50	E	$\%\alpha=100$ T=0
16847 <i>15</i>	5-	16 keV 8	E	$\%\alpha=100$ T=0
16871 20	6+	350 keV <i>50</i>	E	$\%\alpha=100$ T=0
17072 20	4+	180 keV <i>30</i>	E	$\%\alpha = 100$ T=0
17155 <i>15</i>	5-	26 keV 5	E	$\%\alpha = 100$ T=0
17213 <i>15</i>	4+	225 keV 30	E	$\%\alpha = 100$ T=0
17284 <i>15</i>	3-	86 keV 25	E	$\%\alpha=100$ T=0
17295 <i>15</i>	8+	200 keV 25	EFGH	$\%\alpha=100$ T=0
17390 <i>15</i>		<10 keV	E	$\%\alpha=100$
17430 <i>15</i>	9-	220 keV 25	CE	$\%\alpha=100$ T=0
17541 <i>15</i>	6+	86 keV 9	E	$\%\alpha=100$ T=0
17550 <i>10</i>	(2 <sup>+</sup> )	19 keV	K	%n=?; %p=?; % $\alpha$ =? T=(1)
17606 <i>15</i>	5-	140 keV 20	E	$\%\alpha = 100$ T=0
17769 20	4+	≈125 keV	E K	%p=?; $%\alpha$ =? T=0
17851 <i>15</i>	5-	200 keV 30	E	$\%\alpha=100$ T=0
17910 20	$(0^+)$			%n=?; %p=?
18005 <i>15</i>	7-	<10 keV	E	$\%\alpha$ =100
				T=0
18024 5	5-	34 keV 7	E	$\%\alpha=100$ T=0
18083 25	4+	140 keV 60	E	$\%\alpha=100$ T=0
18125 5	7-	29 keV 6	CE	$\%\alpha=100$ T=0
18286 <i>10</i>	6+	190 keV <i>30</i>	E	$\%\alpha$ =100 T=0

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

E(level)	$\mathbf{J}^{\pi}$	T <sub>1/2</sub>		XREF			Comments	
20468 30	5-	280 keV	70	E	T= %α	0 x=100		
20686 6	9-	78 keV		E G	$T=0$ $\%\alpha=100$			
					7σα T=			
20760 <i>30</i>	7-	240 keV	50	EF	%α T=	x=100 0		
20800 25	5-	170 keV	60	E	%α T=	x = 100		
20950 40	7-	300 keV	50 C	E		z=100		
21062 <i>6</i>	9-	60 keV	7 6 C	E GH		=100		
2130×10 <sup>1</sup> 10	7-	300 keV	7	EF		z=100		
2180×10 <sup>1</sup> 10	7-	300 keV	C	EF		z=100		
2230×10 <sup>1</sup> 10	7-	500 keV	C	EF	$% \alpha$	=100		
2260×10 <sup>1</sup> 30						T=?; %n=?		
22800 60	9-	500 keV	C	E	$% \alpha$	2: Γ=broad. =100		
22870 40	9-	225 keV	40 C	E GH	$T=0$ $% \alpha = 100$			
2340×10 <sup>1</sup> 20	8+	500 keV	,	E	$T=0$ $\%\alpha=100$			
23700 <i>30</i>	(9-)	≤200 keV	,	FG	T=1	0 e=100		
24210 25	8+	350 keV		E G	$% \alpha = 0$	=100		
2490×10 <sup>1</sup> 50						T=?; %n=?		
25100 <i>50</i>	8+	≈200 keV	,	E G	$% \alpha$	2: Γ=broad. =100		
25670 <i>50</i>		≈400 keV	,	E G	$T=$ % $\alpha$	v=100		
$2710 \times 10^{1} 10$ $27500$	$(9^{-})$ $10^{+}$	700 keV	,	EF H		z=100 Γ=?; %n=?		
					$T_{1/}$	2: Γ=broad.		
28000	8+	1600 keV	r	E	%α T=	e=100 0		
$2820 \times 10^{1} \ 30$		700 keV	r	E	$% \alpha$	=100		
						$\gamma$ <sup>(20</sup> Ne)		
$E_i(level)$ $J_i^{\pi}$		$E_{\gamma}$	$I_{\gamma}$	$E_f$	$\mathbf{J}_f^{\pi}$	Mult.	Comments	
$\frac{1}{1633.674}$ $\frac{1}{2^{+}}$		3.602 15	100	0.0	0+	[E2]	B(E2)(W.u.)=20.3 10	
4247.7 4 <sup>+</sup> 4966.51 2 <sup>-</sup>			100	1633.674		[E2]	B(E2)(W.u.)=22 2 B(E1)(W.u.)=7.3×10 <sup>-6</sup> 8; B(M2)(W.u.)=0.017 4;	
4966.51 2	333.	2.54 20	99.4 2	1633.674	Δ'	[E1+M2+E3]	B(E3)(W.u.)=62	
		5.85 20	0.6 2	0.0	0+	[M2]	$\delta$ (M2/E1)=0.076 11, $\delta$ (E3/E1)=0.043 16. B(M2)(W.u.)=0.0025 8	
5621.4 3		4.9 <i>18</i> 7.3 <i>17</i>	4.8 <i>16</i> 87.6 <i>10</i>	4966.51 1633.674	2 <sup>-</sup> 2 <sup>+</sup>	[M1] [E1]	B(M1)(W.u.)=2.0×10 <sup>-3</sup> 9 B(E1)(W.u.)=6.6×10 <sup>-6</sup> 19	
	370	, 1/	37.0 10	1055.077	_	لبا	2(21)(11.41)=0.0/10 1/	

# $\gamma$ <sup>(20</sup>Ne) (continued)

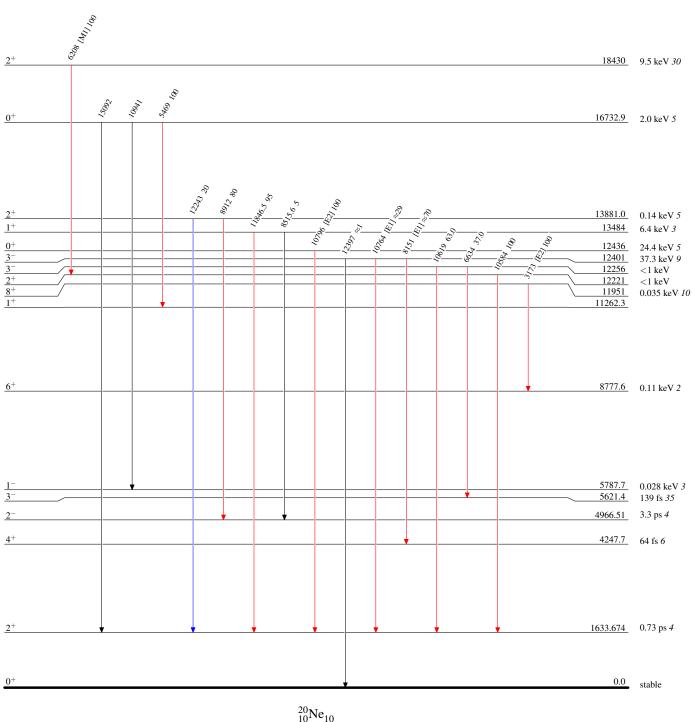
$E_i(level)$	$\mathbf{J}_i^{\pi}$	$E_{\gamma}$	$I_{\gamma}$	$\mathbf{E}_f \qquad \mathbf{J}_f^{\pi}$	Mult.	δ	Comments
5621.4	3-	5620.6 17	7.6 10	$0.0   0^{+}$	[E3]		B(E3)(W.u.)=11 4
5787.7	1-	4154 3	82 5	1633.674 2+	[E1]		$B(E1)(W.u.)=1.1\times10^{-4} 2$
2.0	•	5787 <i>3</i>	18 5	$0.0   0^{+}$	[E1]		$B(E1)(W.u.)=8.3\times10^{-6}$ 3
6725	$0^{+}$	5090 <i>5</i>	100	1633.674 2 <sup>+</sup>	[E2]		B(E2)(W.u.)=3.6
0723	O	6724 5	100	$0.0   0^{+}$	[E0]		B(B2)(W.a.)=3.0
7004.0	4-	1383 4	25	5621.4 3	[M1]		$B(M1)(W.u.)=6.9\times10^{-3}$
7004.0	7	2037 4	11	4966.51 2	[E2]		B(E2)(W.u.)=1.8
		2756 4	63.5	4247.7 4+	[E1]		$B(E1)(W.u.)=9.1\times10^{-5}$
		5369 4	0.5 2	1633.674 2 <sup>+</sup>	[M2]		$B(M2)(W.u.)=1.5\times10^{-2} 8$
7156.3	3-	1369 3	40 5	5787.7 1 <sup>-</sup>	[E2]		B(E2)(W.u.)=50 8
7130.3	3	2908.4 12	60 5		[E2]		B(E2)(W.u.)=30.6 $B(E1)(W.u.)=7.9\times10^{-5}.9$
7191	$0^{+}$	5556 <i>3</i>	100	4247.7 4 <sup>+</sup> 1633.674 2 <sup>+</sup>	[E1] [E2]		B(E1)(W.u.)=7.9×10 9 B(E2)(W.u.)=0.31 6
/191	U	7190 <i>3</i>	100	$0.0   0^{+}$	[E2] [E0]		B(E2)(W.u.)=0.31 0
7421.9	2+	3173.9 17	≤7.6	4247.7 4 <sup>+</sup>	[E0]		$I_{\gamma}$ : author quotes $I_{\gamma}/\Sigma$ ( $I_{\gamma}$ ) $\leq 7.6\%$ .
7421.7	2	5787.3 12	≥89.2	1633.674 2 <sup>+</sup>	[M1+E2]	+8.4 +15-10	B(M1)(W.u.)= $1.0 \times 10^{-4}$ 3;
		3101.3 12	≥09.2	1033.074 2	[MII+E2]	+6.4 +13-10	$B(M1)(W.u.)=1.0\times10$ 3, B(E2)(W.u.)=1.7 2
							$I_{\gamma}$ : author quotes $I_{\gamma}/\Sigma$ ( $I_{\gamma}$ ) $\geq$ 90.6% 14.
		7420.4 12	≤10.8	$0.0   0^{+}$			$I_{\gamma}$ : author quotes $I_{\gamma}/\Sigma$ ( $I_{\gamma}$ ) $\leq$ 9.0.0 % 14. $I_{\gamma}$ : author quotes $I_{\gamma}/\Sigma$ ( $I_{\gamma}$ ) $\leq$ 9.4% 14.
7833.4	2+	3585.4 19	<2	4247.7 4 <sup>+</sup>			$1\gamma$ . author quotes $1\gamma/2$ $(1\gamma) \le 9.4\%$ 14.
7055.4	2	6198.7 <i>15</i>	17 <i>1</i>	1633.674 2 <sup>+</sup>	[M1]		$B(M1)(W.u.)=2.3\times10^{-3}$ 3
		7831.8 <i>15</i>	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 <sup>+</sup>	[E2]		$B(E1)(W.u.)=5\times10^{-5} 3$
8708	1	8706 <i>7</i>	87 8	$0.0   0^{+}$	[E1]		$B(E1)(W.u.)=3\times10^{-3}$ $B(E1)(W.u.)=1.9\times10^{-4}$ 5
8777.6	6+	4529.3 25	100	4247.7 4 <sup>+</sup>	[E1]		B(E2)(W.u.)=20 3
9031	4 <sup>+</sup>	4782 7	<2	4247.7 4+	[12]		D(L2)(W.u.)=20 3
7031	•	7396 7	100	1633.674 2+	[E2]		B(E2)(W.u.)=5.8 7
9116	3-	3495 <i>4</i>	17 4	5621.4 3	[M1]		$B(M1)(W.u.)=4.9\times10^{-3}$ 12
		4149 3	33 5	4966.51 2	[M1]		$B(M1)(W.u.)=5.8\times10^{-3}$ 11
		7480 <i>3</i>	50 <i>5</i>	1633.674 2+	[E1]		$B(E1)(W.u.)=6.2\times10^{-5}$ 10
9318	$(2^{-})$	7682.7 20	100	1633.674 2+	[]		_()(,
9487	2+	7848 <i>3</i>	100	1633.674 2+	[M1]		$B(M1)(W.u.)=2.5\times10^{-2}$ 10
					. ,		$I_{\gamma}$ : authors report $I_{\gamma}/\Sigma$ ( $I_{\gamma}$ )=(100)%.
		9481 <i>3</i>		$0.0   0^{+}$			
9873	3 <sup>+</sup>	2451 5	≈3	7421.9 2+			
		4252 5	≈7	5621.4 3-			
		4905 <i>4</i>	≤5	4966.51 2			
		5624 5	12 3	4247.7 4+			
		8237 <i>4</i>	78	1633.674 2+			
005-		9870 <i>4</i>	< 0.5	$0.0   0^{+}$			
9935	$(1^{+})$	4967 12	22 5	4966.51 2			
0000	4+	8299 12	78 <i>5</i>	1633.674 2 <sup>+</sup>	IE01		D/F2\/W \ 0.2.27
9990	4+	8354 8	100	1633.674 2+	[E2]		B(E2)(W.u.)=8.3 37
		9987 8		$0.0   0^{+}$			$I_{\gamma}$ : authors report $I_{\gamma}/\Sigma$ ( $I_{\gamma}$ )=(100)%.
10273.2	2+	2440.4 <i>33</i>	0.22 6	7833.4 2 <sup>+</sup>	[M1]		$B(M1)(W.u.)=2.6\times10^{-2}$ 7
10273.2	Z	2852 <i>4</i>	6.9 4	7421.9 2 <sup>+</sup>	[M1]		B(M1)(W.u.)=2.0×10 / B(M1)(W.u.)=0.64 8
		4652 4	2.1 2	5621.4 3	[E1]		$B(E1)(W.u.)=1.9\times10^{-3}$ 3
		5306 3	1.3 1	4966.51 2			B(E1)(W.u.)=8.0×10 <sup>-4</sup> 11
		8638 <i>3</i>	1.3 <i>1</i> 88.9 <i>5</i>	1633.674 2 <sup>+</sup>	[E1]		B(B1)(W.u.)=8.0×10 · 11 B(M1)(W.u.)=0.30 3
		10271 3	0.65 <i>14</i>	$0.0   0^{+}$	[M1]		B(W1)(W.u.)=0.303 $B(E2)(W.u.)=9.5\times10^{-2} 26$
10600	6-	2156 8	4.5 12		[E2]		$B(E2)(W.u.)=9.3\times10-20$ $B(M1)(W.u.)=6.1\times10^{-3}$ 28
10609	U	3605 8	4.5 <i>12</i> 95.5 <i>12</i>	8453 5 <sup>-</sup> 7004.0 4 <sup>-</sup>	[M1] [E2]		B(E2)(W.u.)=17 6
10694	4-,3+	5726 <i>6</i>	95.5 12 75 4	4966.51 2 <sup>-</sup>	[154]		D(L2)( W.u.)-1/ U
1007	٠,٠	6445 6	25 4	4247.7 4 <sup>+</sup>			
10884	3+	6635 4	23 5	4247.7 4+			
					novt noss (f-	otnotes of and -f	toble)
				Continued on	next page (10	otnotes at end of	table)

## $\gamma$ (20Ne) (continued)

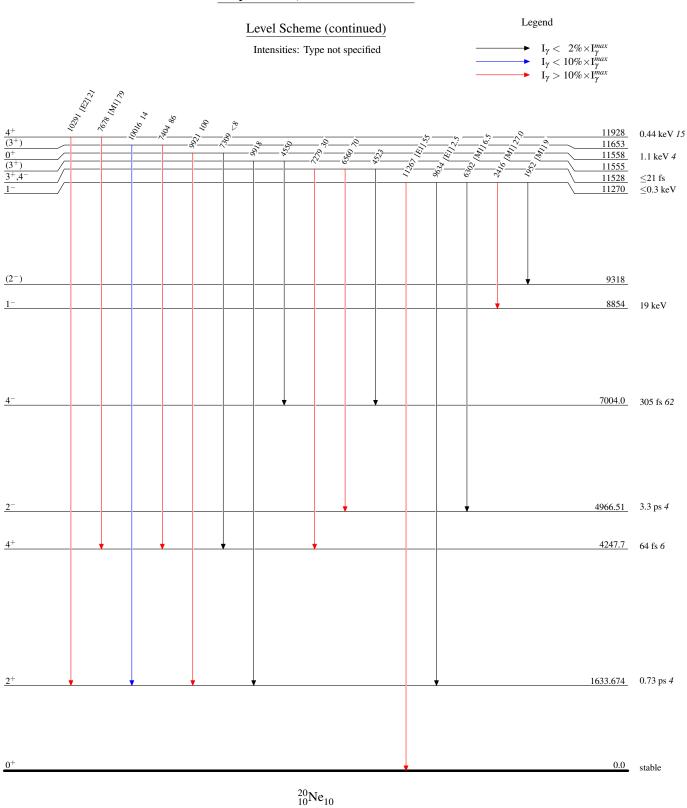
$E_i(level)$	$\mathbf{J}_i^{\pi}$	$\mathrm{E}_{\gamma}$	${ m I}_{\gamma}$	$\mathrm{E}_f$	$\mathbf{J}_f^{\pi}$	Mult.	Comments
10884	3 <sup>+</sup>	9248 <i>3</i>	77 5	1633.674	2+		
11090	4+	6841 <i>4</i>	99.50 25	4247.7	4 <sup>+</sup>	[M1]	$B(M1)(W.u.)=5.0\times10^{-2} 6$
11070	•	9454 3	0.50 25	1633.674		[E2]	$B(E2)(W.u.)=1.0\times10^{-2}$ 5
11262.3	1+	9626.1 19	16 5	1633.674		[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	ì- ´	[M1]	B(M1)(W.u.)=0.63 8
		6302 5	6.5 10	4966.51	2-	[M1]	$B(M1)(W.u.)=8.8\times10^{-3}$ 7
		9634 5	2.5 10	1633.674	2+	[E1]	$B(E1)(W.u.)=4.0\times10^{-5}$ 16
		11267 5	55 2	0.0	$0^{+}$	[E1]	$B(E1)(W.u.)=5.4\times10^{-4}$ 7
11528	$3^{+},4^{-}$	4523 7		7004.0	4-	. ,	Deexcites the 11528 and/or the 11555 level.
		6560 <i>6</i>	70 <i>3</i>	4966.51	$2^{-}$		
		7279 <i>6</i>	30 <i>3</i>	4247.7	4+		
11555	$(3^{+})$	4550 7		7004.0	4-		Deexcites the 11555 and/or the 11528 level.
		9918 <i>6</i>		1633.674			
11558	$0_{+}$	7309 5	<8	4247.7	4+		
		9921 4	100	1633.674			
11653	$(3^{+})$	7404 6	86 <i>3</i>	4247.7	4+		
		10016 5	14 3	1633.674			3
11928	4+	7678 <i>5</i>	79 11	4247.7	4+	[M1]	$B(M1)(W.u.)=2.2\times10^{-3} 6$
	- 1	10291 4	21 11	1633.674		[E2]	$B(E2)(W.u.)=1.8\times10^{-2} I0$
11951	8+	3173 5	100	8777.6	6+	[E2]	B(E2)(W.u.)=9.0 <i>13</i>
12221	2+	10584 4	100	1633.674			$I_{\gamma}$ : authors report $I_{\gamma}/\Sigma$ ( $I_{\gamma}$ )=(100)%.
12256	3-	6634 4	37.0 15	5621.4	3-		
12401	2-	10619 3	63.0 15	1633.674		EE 13	D(E1)(W ) 7.410-4
12401	3-	8151 6	≈70	4247.7	4 <sup>+</sup>	[E1]	$B(E1)(W.u.) = 7.4 \times 10^{-4}$
		10764 5	≈29	1633.674		[E1]	$B(E1)(W.u.)=1.3\times10^{-4}$
12426	$0^{+}$	12397 5	≈1 100	0.0	0 <sup>+</sup> 2 <sup>+</sup>	EE 21	D(E2)(W) 0.42.12
12436 13484	0 · 1 +	10796 <i>5</i> 8515.6 <i>20</i>	100 5	1633.674 4966.51	2-	[E2]	B(E2)(W.u.)=0.43 13
13464	1	11846.5 20	95	1633.674	_		
13881.0	2+	8912 23	80	4966.51	2-		
13001.0	2	12243 23	20	1633.674			
16732.9	$0^{+}$	5469 6	100	11262.3	1+		$I_{\gamma}$ : authors report $I_{\gamma}/\Sigma$ ( $I_{\gamma}$ )=(100)%.
10/32.7	3	10941 6	100	5787.7	1-		1y. addicts 10port 1/12 (1/)=(100/70.
		15092 5		1633.674			
18430	2+	6208 21	100	12221	2+	[M1]	$B(M1)(W.u.)=6\times10^{-2}$
							$I_{\gamma}$ : authors report $I_{\gamma}/\Sigma$ ( $I_{\gamma}$ )=(100)%.

#### Adopted Levels, Gammas 1998Ti06





#### Adopted Levels, Gammas 1998Ti06



# **Adopted Levels, Gammas** 1998Ti06 Legend Level Scheme (continued) $\begin{array}{ll} & I_{\gamma} < 2\% \times I_{\gamma}^{max} \\ & I_{\gamma} < 10\% \times I_{\gamma}^{max} \\ & I_{\gamma} > 10\% \times I_{\gamma}^{max} \end{array}$ Intensities: Type not specified $\begin{array}{r} 1^{+} \\ 4^{+} \\ 3^{+} \\ \hline 4^{-},3^{+} \\ 6^{-} \\ 2^{+} \\ 4^{+} \\ \hline (1^{+}) \\ 3^{+} \end{array}$ 11262.3 11090 $\leq$ 0.5 keV 10884 $<\!\!21\;fs$ 10694 16 fs 5 ≤0.3 keV 10609 10273.2 155 keV *30* <24.3 fs 9990 9935 9873 2<sup>+</sup> (2<sup>-</sup>) 9487 29 keV 15 9318 9116 3.2 keV 8453 0.013 keV 4 7833.4 2 keV 7421.9 15.1 keV 7 7004.0 305 fs 62 5621.4 139 fs 35 4966.51 3.3 ps 4 4247.7 64 fs 6 1633.674 0.73 ps 4 0.0 stable $^{20}_{10}{\rm Ne}_{10}$

# **Adopted Levels, Gammas** 1998Ti06 Legend Level Scheme (continued) $\begin{array}{ll} \quad & I_{\gamma} < 2\% \times I_{\gamma}^{max} \\ \quad & I_{\gamma} < 10\% \times I_{\gamma}^{max} \\ \quad & I_{\gamma} > 10\% \times I_{\gamma}^{max} \end{array}$ Intensities: Type not specified - - 13% (E2)100 9031 3 keV 8777.6 0.11 keV 2 8708 2.1 keV 8 8453 0.013 keV 4 2+ 7833.4 2 keV 7421.9 15.1 keV 7 3.4 keV 2 8.2 keV 3 7191 7156.3 7004.0 305 fs 62 $0^{+}$ 6725 19.0 keV 9 | 5620 (51/82) | 39873 (187) | 554 (181/8) | 514 (187) - 495,655 /AQ| - 33,25,54 /AQ| - 14,442 /AQ| 5787.7 0.028 keV 3 5621.4 139 fs 35 4966.51 3.3 ps 4 4247.7 64 fs 6 1633.674 0.73 ps 4 0.0 stable

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