

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia, Anagha Chakraborty		NDS 186, 2 (2022)	31-Mar-2022

$Q(\beta^-)=2466.3$ 5; $S(n)=8868.9$ 5; $S(p)=16530$ 30; $Q(\alpha)=-12172.7$ 10 [2021Wa16](#)
 $S(2n)=14069.6$ 5, $S(2p)=29810$ 60 ([2021Wa16](#)).

Other studies:

Measurement of yields in fragmentation reactions: [2012Kw02](#), [2012Zh06](#), [2007No13](#).

Measured one neutron removal cross section to be 71 mb 8 ([2010Ro23](#)) on Be.

^{24}Ne on ^{208}Pb , $E=7.9$ MeV/nucleon ([2007Be66](#)).

In [2006Kh08](#), cross section= 2141 mb 137 at magnetic rigidity ($\beta\rho$)= 2.753 Tm, $E=60.63$ MeV/u and cross section= 2097 mb 44 at $\beta\rho=2.575$ Tm, $E=53.06$ MeV/u for $\text{Si}(^{24}\text{Ne},X)$ and related reduced strong absorption radius $\langle r_0^2 \rangle = 1.179$ fm² 24 was measured.

The later one was used to study the isospin dependence of the reduced strong absorption radius.

 ^{24}Ne LevelsCross Reference (XREF) Flags

A	^{24}F β^- decay	D	$^{22}\text{Ne}(t,p\gamma)$
B	^{25}F β^-n decay	E	$^{22}\text{Ne}(\alpha,^2\text{He})$
C	$^{22}\text{Ne}(t,p)$	F	$^{14}\text{C}(^{14}\text{C},\alpha\gamma)$

E(level) [†]	J^π [‡]	$T_{1/2}$ [#]	XREF	Comments
0	0 ⁺	3.38 min 2	ABCDEF	$\% \beta^- = 100$ T=2 $T_{1/2}$: From 1956Dr11 ($\beta(t)$, $\gamma(t)$). Other: 3.2 min 2 (1969Mc12). $\Delta \langle r^2 \rangle (^{20}\text{Ne}, ^{24}\text{Ne}) = -0.627$ 19 (stat) 75 (sys) (2011Ma48). $\langle r^2 \rangle^{1/2} (^{24}\text{Ne}) = 2.9007$ fm 78 (charge radius) (2013An02).
1981.5 4	2 ⁺	0.65 ps 20	ABCDEF	T=2 J^π : 2 from $\gamma(\theta)$ in (t,p γ), E2 to g.s.
3871.2 8	2 ⁺	<0.07 ps	CDEF	T=2 J^π : L=2 in (t,p).
3963.1	4 ⁽⁺⁾	<21 ns	CD F	T=2 J^π : 4 from (t,p γ), p- γ correlation measurements; parity from shell model calculations.
4766.6 11	0 ⁺	1.8 ps 6	CD F	T=2 J^π : L=0 in (t,p).
4886.6		<0.7 [@] ps	C F	T=2
5576.8	2 ⁽⁺⁾	<21 ns	CD F	T=2 J^π : 2 from p $\gamma(\theta)$ in (t,p γ); parity from shell model calculations.
5632.4		<0.7 [@] ps	C F	
5653.8		<0.7 [@] ps	C F	XREF: C(5700).
6026.9		<0.7 [@] ps	C F	
6362.0		<0.7 [@] ps	C EF	
6746.6		<0.7 [@] ps	F	
6859.1		<0.7 [@] ps	C F	
6983.1		<0.7 [@] ps	F	
7249.0		<0.7 [@] ps	F	
7296.2		<0.7 [@] ps	C F	XREF: C(7320).
7389.2		<0.7 [@] ps	F	
7550 60			C	
7640.4		<0.7 [@] ps	F	

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Adopted Levels, Gammas (continued) ^{24}Ne Levels (continued)

E(level) [†]	T _{1/2} [#]	XREF	Comments
7740.4	<0.7 [@] ps	F	
7924.6	<0.7 [@] ps	C F	XREF: C(7830).
8040.4	<0.7 [@] ps	C F	
8150 60		C E	E(level): From (t,p).
8394.5 11	<0.7 [@] ps	C F	
8530 60		C	
8860 60		C	
9040 60		C	
9180 60		C	
9380 60		C	
9630 60		C	
9780 60		C e	
9960 60		C e	
10200 60		C	
10630 60		C	
11080 60		C	
11180 60		C	
1.135×10 ⁴ 15		E	
11470 60		C	

[†] From a least-squares fit to γ -ray energies for levels with depopulating gammas, using equal weight for γ without uncertainty. In absence of depopulating γ , level energies are from particle data set.

[‡] Additional spin assignments, not adopted, are suggested in reaction datasets.

[#] From (t,p γ – DSAM), except where otherwise noted.

[@] From (¹⁴C, $\alpha\gamma$).

 $\gamma(^{24}\text{Ne})$

E _i (level)	J _i ^{π}	E _{γ} [†]	I _{γ} ^{†#}	E _f	J _f ^{π}	Mult.	δ	α ^{&}	Comments
1981.5	2 ⁺	1981.6 4	100	0	0 ⁺	E2 [@]		3.08×10 ⁻⁴	B(E2)(W.u.)=6.9 22 E _{γ} : From ²⁴ F β^- decay.
3871.2	2 ⁺	1886 [‡] 4	100.0 [‡] 22	1981.5	2 ⁺	D(+Q)			Mult., δ : D+Q, δ =-0.18 in (¹⁴ C, $\alpha\gamma$) and D(+Q), δ =+0.15 in (t,p γ).
		3870	11.1 [‡] 22	0	0 ⁺				
3963.1	4 ⁽⁺⁾	1981	100	1981.5	2 ⁺				
4766.6	0 ⁺	2784.9 [‡] 10	100	1981.5	2 ⁺	[E2]		6.91×10 ⁻⁴	B(E2)(W.u.)=0.46 16
4886.6		2905	100	1981.5	2 ⁺				
5576.8	2 ⁽⁺⁾	3595	100	1981.5	2 ⁺	D(+Q)	+0.07 7		Mult., δ : From $\gamma(\theta)$ in (t,p γ).
5632.4		1760	100	3871.2	2 ⁺	Q [@]			
		3652	96	1981.5	2 ⁺				
5653.8		767	14	4886.6					
		1690	100	3963.1	4 ⁽⁺⁾				
		3672	59	1981.5	2 ⁺				
6026.9		4045	100	1981.5	2 ⁺				
6362.0		708	100	5653.8					
		730	64	5632.4					
		1476	<30	4886.6					
		2398	49	3963.1	4 ⁽⁺⁾				
6746.6		1092	54	5653.8					

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Adopted Levels, Gammas (continued) $\gamma({}^{24}\text{Ne})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\dagger	$I_\gamma^{\dagger\#}$	E_f	J_f^π	$E_i(\text{level})$	J_i^π	E_γ^\dagger	$I_\gamma^{\dagger\#}$	E_f	J_f^π
6746.6		2784	100	3963.1	4 ⁽⁺⁾	7389.2		5407	100	1981.5	2 ⁺
6859.1		4877	100	1981.5	2 ⁺	7640.4		3677	100	3963.1	4 ⁽⁺⁾
6983.1		5001		1981.5	2 ⁺	7740.4		3777	100	3963.1	4 ⁽⁺⁾
7249.0		2362		4886.6		7924.6		1178	100	6746.6	
		3286		3963.1	4 ⁽⁺⁾	8040.4		6058	100	1981.5	2 ⁺
7296.2		5314	100	1981.5	2 ⁺	8394.5		6412	100	1981.5	2 ⁺

[†] From (${}^{14}\text{C},\alpha\gamma$), except otherwise noted.

[‡] From (t, γ).

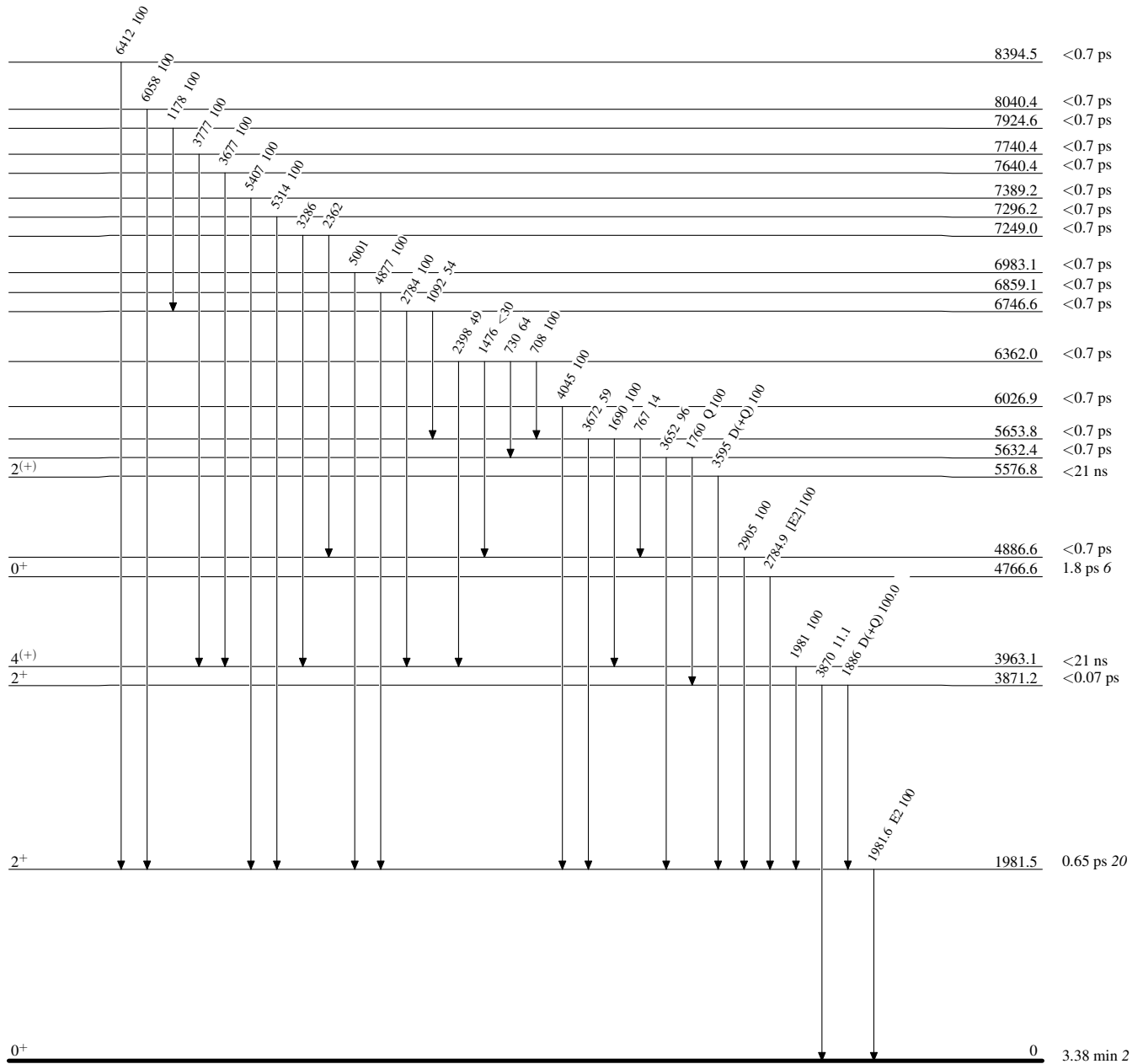
Relative photon branching from each level.

@ From ${}^{14}\text{C}({}^{14}\text{C},\alpha\gamma)$ and RUL, if applicable.

& [Additional information 1](#).

Adopted Levels, GammasLevel Scheme

Intensities: Relative photon branching from each level

 $^{24}_{10}\text{Ne}_{14}$