Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, C. G. Sheu and J. E. Purcell	NDS 198,1 (2024)	1-Aug-2024

Q(β^-)=−17770 *10*; S(n)=20063.9 *10*; S(p)=1943.49 *27*; Q(α)=−9495.9 *9* 2021Wa16
S_{2n}=35163 *5*; S_{2p}=17900.17 *27* (2021Wa16).

The ^{13}N nucleus was first identified by its characteristic β-decay lifetime property observed in the α bombardment of a boron sample (1934Cu01, 2012Th01).

Nuclear moments:
Measurements:
1961Po09: μ=0.321 *3*.
1964Be24: μ=(−) 0.32212 nm *35*, sign is assumed.
Tabulations: 1989Ra17, 2019StZV: μ=0.3219 *4*.
Calculations: 1966El08, 1968Pe16, 1969Sc33, 1969Sc34, 1974Ha27, 1976Br26, 1978Le03, 1988Va03, 1990Iw02, 1991Bo02, 1999Ki27, 1999Ga57, 2003Su04, 2016Me17.

Theory:
Shell model: 1965Co25, 1971Ja13, 1973Sa30, 1976Br26, 1996Du21, 2000Ko23, 2013Ho14.
Other model analyses: 1963Ba43, 1963Fa03, 1973Le06, 1974Va24, 1975Me24, 1983Sh38, 1993Po11, 1996Ki24, 1997Po12, 2000Zh42, 2002Zh37, 2003Ch33, 2005Du03, 2008Ch34, 2008Sh16, 2013Ci04, 2013Ma60, 2017De19, 2022Sa37.

Mirrors and analog states: 1963Se19, 1966Ce02, 1972Gu05, 1973Sa25, 1974Ch46, 1993Zh17, 1996Ki27, 2005Ch02, 2005Ti07, 2005Ti14, 2006Sh10, 2013Fo22, 2015Fr05, 2018Fo04, 2019Mu05, 2022Va06, 2022Zo01, 2023Se01.

Other related studies: 2003Ar33, 2008Pe13, 2008Se10, 2010Ti04, 2011Ti09, 2015Mo10, 2015To02, 2018Ge07.

Unplaced experimental results:
1962Wa31: ^{12}C(p,d) E=18 to 19.8 MeV. No resonant structures are observed.
1975Na15, 1976Na09: ^{16}O(^{14}N,^{17}O) E=155 MeV. Compared Coulomb effects in (^{14}N,^{17}O) and (^{14}N,^{17}F) reactions.
1976Mo03: ^{16}O(^{14}N,^{17}O) E=79 MeV. Reported angular distributions.
1998Di14: The $^{13}N_{g.s.}$ structure was studied via the ^{11}B(^{13}N,^{12}C)^{12}C transfer reaction at E(^{13}N)=29.5 and 45 MeV.
2001Na02: Si(p,^{13}N). Calculated spallation yields.
2002Ar07, 2002Ar09:^{9}Be,^{181}Ta(^{18}O,^{13}N) E=35 MeV/nucleon. Measured isotope production yields at forward angles.
2005Ba40: Measured ^{13}N production in p+^{16}O spallation at 3.2 GeV.
2007Na31: Measured ^{13}N production in p+^{136}Xe spallation at 1 GeV.
2007No13: ^{9}Be(^{40}Ar, ^{13}N) E=100 MeV/nucleon. Measured isotope production σ.
2010Mi08: ^{181}Ta(^{18}O,^{13}N) E=35 MeV/nucleon. Calculated isotope production yields at forward angles. Compared with measurements of (2002Ar07).
2012Fl02: Studied 1-proton removal from ^{14}O at ≈53 MeV/nucleon.
2019Ch50: Excited states in ^{14}O are observed to 1p decay to ^{13}N+p and to decay sequentially via ^{13}N*(2.36, 3.50, 3.55).
2020Na24: Measured isotope yields in ^{93}Nb(^{12}C,X),(^{13}C,X) at E=65 MeV.
2022Bo01: Measured ^{13}N production yields from ^{12}C(X,^{13}N): X=^{14,15,20}O, ^{14}N at E_{beam}≈450 MeV/nucleon.

Adopted Levels, Gammas (continued)

^{13}N Levels

Cross Reference (XREF) Flags

A	^{13}O ε decay	U	^{12}C(d,n)	AN	^{13}C(^{14}N,^{14}C)
B	^{1}H(^{13}N,p)	V	^{12}C(^{3}He,d)	AO	^{14}N(γ,n)
C	^{1}H(^{14}O,^{13}N)	W	^{12}C(α,t)	AP	^{14}N(π^+,π^+n),(π^+,p)
D	^{2}H(^{14}O,^{3}He)	X	^{12}C(^{7}Li,^{6}He)	AQ	^{14}N(n,2n)
E	^{9}Be(^{10}C,^{13}N)	Y	^{12}C(^{10}B,^{9}Be)	AR	^{14}N(p,d)
F	^{9}Be(^{13}N,X)	Z	^{12}C(^{11}B,^{10}Be)	AS	^{14}N(d,t)
G	^{10}B(^{3}He,n),(^{3}He,X):res	Others:		AT	^{14}N(^{3}He,α)
H	^{10}B(^{3}He,p):res	AA	^{12}C(^{12}C,^{11}B)	AU	^{14}N(^{6}Li,^{7}Li)
I	^{10}B(^{3}He,d):res	AB	^{12}C(^{13}C,^{12}B)	AV	^{14}N(^{10}B,^{11}B)
J	^{10}B(^{3}He,^{3}He):res	AC	^{12}C(^{13}N,^{13}N),^{13}C(^{13}N,^{13}N)	AW	^{14}N(^{14}N,^{13}N)
K	^{10}B(^{3}He,α):res	AD	^{12}C(^{14}N,^{13}C)	AX	^{15}N(p,t)
L	^{10}B(α,n)	AE	^{12}C(^{16}O,^{15}N),(^{16}O,^{13}N)	AY	^{16}O(n,^{13}N)
M	^{10}B(^{6}Li,t)	AF	^{13}C(γ,π^-)	AZ	^{16}O(p,pt)
N	^{10}B(^{9}Be,^{6}He)	AG	^{13}C(ν,μ^-),(ν,e)	BA	^{16}O(p,α)
O	^{11}B(^{3}He,n),^{11}B(^{3}He,nγ)	AH	^{13}C(π^+,π^0)	BB	^{16}O(^{3}He,^{6}Li)
P	^{12}C(p,γ)	AI	^{13}C(π^+,γ)	BC	^{17}Ne $\beta^+\alpha$ decay
Q	^{12}C(p,π^0)	AJ	^{13}C(p,n)	BD	^{208}Pb(^{13}N,^{13}N): coulex
R	^{12}C(p,n):res	AK	^{13}C(^{3}He,t)	BE	^{232}Th(^{22}Ne,^{13}N),^{154}Sm(^{16}O,^{13}N)
S	^{12}C(p,p):res	AL	^{13}C(^{6}Li,^{6}He)		
T	^{12}C(p,α):res	AM	^{13}C(^{13}N,^{13}C)		

E(level)	J^π	$T_{1/2}$ or Γ	XREF	Comments
0.0	$1/2^-$	9.9584 min *36*	ABCD F LMNOPQ UVWXYZ	XREF: Others: AA, AB, AC, AD, AE, AF, AG, AH, AI, AJ, AK, AL, AM, AN, AO, AP, AQ, AR, AS, AT, AU, AV, AW, AX, AY, AZ, BA, BB, BC, BD, BE %ε+%β^+=100 T=1/2; μ=0.3219 *4* (2019StZV,1964Be24) J^π: From L=0 ^{15}N(p,t) (1968Fl03). $T_{1/2}$: From the average of $T_{1/2}$=9.9502 min *32* (2022Lo14), 9.962 min *20* (1989KaYR), 9.967 min *10* (1980An40), 9.965 min *10* (1977Az01), 10.0 min *5* (1973SiYS), 9.963 min *9* (1968Ri15), 10.05 min *5* (1965Bo42), 9.96 min *2* (1965Eb01), 9.965 min *5* (1960Ja12), 9.93 min *5* (1960Ki02), 9.96 min *3* (1958Ar15), 9.96 min *3* (1957Da08, 1958Da09), 10.02 min *10* (1957De22), 10.07 min *6* (1957No17), 10.08 min *4* (1955Wi43), 10.05 min *3* (1953Ch34), 10.05 min *10* (1950Ho01), 10.2 min *1* (1948Co24) 10.13 min *10* (Siegbahn, Arkiv. f. Ast. Math-Fys. 32A No. 9 (1945)) 9.93 min *3* (1939Wa09). $T_{1/2}$: See also 12.3 min ±5.4% (1961Ra06), 9.9670 min *37* (DDEP) and 9.9647 min *39* (2008Se10). $T_{1/2}$: In (1935Ru01), Rutherford discusses β decay.
2367.8 *8*	$1/2^+$	34.5 keV *3*	LM OP S UV XY	XREF: Others: AB, AD, AE, AF, AJ, AK, AL, AR, AS, AT, AU, AX, AZ, BA, BC, BD Γ_γ=0.49 eV *2* Decay Modes: γ, p. E(level): From the average of E_x=2367.6 keV *9* from references in ^{12}C(p,γ), 2369 keV *3* from (1953Ja04) in ^{12}C(p,p):res and 2368.2 keV *28* from (1974Bl06)

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Adopted Levels, Gammas (continued)

^{13}N Levels (continued)

E(level)	J^π	$T_{1/2}$ or Γ	XREF	Comments
				^{12}C(^{3}He,d). J^π: From L=0 ^{12}C(p,p):res (1951Ja21). Γ: From the average (external errors) of Γ=36.15 keV *54* (1973Cl04) ^{12}C(d,n), 36.1 keV *28* (1974Bl06) ^{12}C(^{3}He,d), 34.5 keV *9* (1953Hu18,1973Cl04) ^{12}C(p,γ), 33.7 keV *20* (1968Bl17) ^{12}C(p,γ) 31.4 keV *9* (1968Ri16) ^{12}C(p,γ), 33.3 keV *18* (1974Bl06) ^{12}C(p,γ), 36 keV *2* (1974Ro29) ^{12}C(p,γ), 34.9 keV *2* (2023Sk02) ^{12}C(p,γ) 35.2 keV *5* (2023Cs01) ^{12}C(p,γ) and 34.0 keV *2* (2023Ke11: includes 2008Bu19) ^{12}C(p,γ). Note: uncertainty surrounds some Γ values related to assigning the values as lab or c.m. frame values. Table 1 of (1992Hi14) is helpful for resolving some issues. Γ: In (1991Aj01) Γ=31.7 keV *8* was determined by averaging only (1974Bl06) and (1968Ri16) values from ^{12}C(p,γ).
3500.4 *8*	3/2$^-$	55.0 keV *6*	A CD LMNOP S UV XYZ	XREF: Others: AF, AH, AJ, AK, AL, AM, AR, AS, AT, AV, AX, AZ, BA, BB, BC $\Gamma_{\gamma 0}$=0.49 eV *3*; $\Gamma_{\gamma 1}$=0.043 eV Γ_γ≈0.533 eV XREF: AJ(3464)AK(3.53E3)AS(3.51E3)AV(3.51E3). Decay Modes: γ, p. E(level): From E_x=3499 keV *6* (1966Ar03) ^{12}C(p,p):res and 3500.4 keV *8* from references in ^{12}C(p,γ). J^π: From L=0,2 ^{11}B(^{3}He,n) (1971Hs03). Γ: From the average of Γ=60 keV *3* (1974Ro29) ^{12}C(p,γ), 61.9 keV *40* (1968Bl17) ^{12}C(p,γ), 55.2 keV *3* (2023Ke11) ^{12}C(p,γ), 53.2 keV *7* (2023Cs01) ^{12}C(p,γ), and 63 keV *4* (2005Kn02) ^{13}O β-p. $\Gamma_{\gamma 0}$: From the R-matrix analysis in (2023Ke11) as detailed above. In (1991Aj01) the analysis of (1952Se01, 1963Yo06) data given in (1980Ba54) was accepted. $\Gamma_{\gamma 1}$: From $\Gamma_{\gamma 0}$, I(γ0)=92% *1* and I(γ1)=8% *1* from (1974Ro29).
3544.5 *5*	5/2$^+$	49.0 keV *5*	LM O S UV XYZA	XREF: Others: AB, AD, AE, AF, AH, AJ, AK, AR, AT, BA, BC XREF: AE(3.5E3)AF(3.51E3)AH(3.5E3)AJ(3.5E3). Decay Mode: p. E(level): From the average of E_x=3544.4 keV *5* from the (2023Ke11) analysis of (1976Me22) ^{12}C(p,p):res and 3549.1 keV *50* (1974Bl06) ^{12}C(^{3}He,d). J^π: From phase-shift analysis of ^{12}C(p,p) (1951Ja21). Γ: From the (2023Ke11) R-matrix analysis of (1976Me22) ^{12}C(p,p):res. See also 47 keV *7* from (1974Bl06).
6368 *9*	5/2$^+$	11 keV	MNO S V	XREF: Others: AF, AJ, AK, AR, AT, AX, BA, BB XREF: AJ(6.3E3). Decay Mode: p. E(level): From the weighted average (external errors) of E_x=6378 keV *8* (1956Re39) ^{12}C(p,p):res, 6353 keV *9* (1971Hs03) ^{11}B(^{3}He,n) and 6380 keV *30* (1968Fl03) ^{15}N(p,t). J^π,Γ: From phase-shift analysis (1956Re39) ^{12}C(p,p):res.

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Adopted Levels, Gammas (continued)

^{13}N Levels (continued)

E(level)	J^{π}	$T_{1/2}$ or Γ	XREF	Comments
6886 *5*	$3/2^{+}$	115 keV *5*	M O S V YZ	XREF: Others: AD, AK, AT Γ_{p0}=51 keV; Γ_{p1}=63 keV (1963Ba36) Decay Mode: p. E(level): From the average of E_x=6890 keV *6* from values in ^{12}C(p,p):res and 6875 keV *10* (1971Hs03) in ^{11}B(^{3}He,n). J^{π}: From phase-shift analysis of angular distributions and σ(E) in (1956Re39) ^{12}C(p,p),(p,p$_1\gamma(\theta)$). Γ: From the average of Γ=115 keV *5* (1963Ni05) ^{12}C(p,p):res, 110 keV *15* (1962Cl12) ^{14}N(^{3}He,α) and 120 keV *30* (1974Ho06) ^{10}B(^{6}Li,t).
7156 *5*	$7/2^{+}$	9.0 keV *5*	MNO S V YZA	XREF: Others: AB, AJ, AK, AT XREF: O(7145)AJ(7.2E3). Decay Mode: p. E(level): From the average of E_x=7145 keV *9* (1971Hs03) ^{11}B(^{3}He,n), 7155 keV *9* (1963Ba36) ^{12}C(p,p):res and 7166 keV *8* (1962Cl12) ^{14}N(^{3}He,α). J^{π}: From phase-shift analysis in (1963Ba36, 1963Ni05) ^{12}C(p,p):res. Γ: From (1963Ni05) ^{12}C(p,p):res.
7377 *6*	$5/2^{-}$	66 keV *9*	A M O S V Y A	XREF: Others: AH, AK, AL, AR, AS, AT, AV, AX, BA, BB Γ_{p0}/Γ=0.10 (1963Ni05) XREF: O(7363)AL(7.4E3). Decay Mode: p. E(level): From the average of E_x=7363 keV *8* (1971Hs03) ^{11}B(^{3}He,n), 7.38 MeV *1* (1963Ba36) ^{12}C(p,p), 7380 keV *20* (1968Fl03) ^{15}N(p,t) and 7388 keV *8* (1962Cl12) ^{14}N(^{3}He,α). J^{π}: From phase-shift analysis of ^{12}C(pol. p,p) (1968Be31). L=2 ^{15}N(p,t) (1968Fl03). Γ: From the average (external errors) of Γ=69 keV *5* (1963Ni05) ^{12}C(p,p):res, 104 keV *20* (2005Kn02) ^{13}O β-p and 45 keV *10* (1962Cl12) ^{14}N(^{3}He,α). Γ: In (1970Aj04) the value Γ=75 keV *5* from (1963Ni05) is listed, but this value, given in the abstract of (1963Ni05) was Γ_{lab}.
8×10^{3}	$3/2^{+}$	≈1.5 MeV	O S V Z	XREF: Others: AB XREF: AB(7.9E3). Decay Mode: p. E(level),Γ: From (1962Sh22, 1966Ba35) ^{12}C(p,p):res. See also E_x=8200 keV *22* from (1971Hs03) ^{11}B(^{3}He,n), but note that data supporting this value is not shown in the article. J^{π}: From phase-shift analysis of ^{12}C(p,p) (1962Sh22).
8918 *11*	$1/2^{-}$	278 keV *16*	A M O S V Y	XREF: Others: AB, AJ, AK, AR, AS, AT, AX, BA Γ_{p0}/Γ≈0.541; Γ_{p1}/Γ≈0.459 (2005Kn02) XREF: AB(8.5E3)AJ(8.8E3)AS(8.93E3). Decay Mode: p. E(level): From (1971Hs03) ^{11}B(^{3}He,n). J^{π}: From L=0 ^{15}N(p,t) (1968Fl03) and phase-shift

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Adopted Levels, Gammas (continued)

^{13}N Levels (continued)

E(level)	J^{π}	$T_{1/2}$ or Γ	XREF	Comments
				analysis of ^{12}C(p,p) (1962Sh22). Γ: From (2005Kn02) ^{13}O β-p. See also 230 keV from ^{12}C(p,p):res.
9×10^{3}†	9/2^{+}	280 keV *30*	MN V Z	XREF: Others: AA, AK E(level),Γ: From (1974Ho06) ^{10}B(^{6}Li,t). J^{π}: In (1974Ho06) comparison of angular distributions in ^{10}B(^{6}Li,^{3}He) and ^{10}B(^{6}Li,t) indicates the state is the analog of ^{13}C*(9.5 MeV), which is presently identified as 9/2^{+}. See also L=4 in ^{12}C(^{3}He,d) (1980Pe13). Γ: See also 0.40 MeV *5* in ^{12}C(^{3}He,d) (1969Fo02).
9476 *8*	3/2^{-}	30 keV	A M O S V	XREF: Others: AJ, AK, AS, BA Γ_{p0}/Γ=0.72 (1972Be15) XREF: M(9.52E3)BA(9.52E3). Decay Mode: p. E(level): From (1971Hs03) ^{11}B(^{3}He,n). See also E_x=9520 keV *20* from (1966Ch18) ^{11}B(^{3}He,n). J^{π}: From L=0,2 ^{11}B(^{3}He,n) (1971Hs03) and phase-shift analysis of ^{12}C(p,p) (1962Sh22). Γ: From (1962Sh22) ^{12}C(p,p):res. See also Γ=143 keV *18* (2005Kn02) ^{13}O β-p, but note the fit in this region is rather poor.
10.26×10^{3} *14*	(1/2^{+},3/2^{+})	260 keV *90*	P	$\Gamma_{\gamma 0}$>0.6 eV (1973Me12) Decay Modes: γ, p. E(level),Γ: From (1973Me12) ^{12}C(p,γ). For J^{π}=3/2^{+}, Γ_{lab}=280 keV *100* and for J^{π}=1/2^{+}, Γ_{lab}=300 keV *100*. J^{π}: From ^{12}C(p,γ_0) (1973Me12) where θ_{γ}=90° and γ_0 to ^{13}N$_{g.s.}$(J^{π}=1/2^{-}) is observed.
10.36×10^{3}	5/2^{-}	30 keV	e mnO S V	XREF: Others: AK, BA Γ_{p0}/Γ=0.26 (1968Be31) XREF: m(10.35E3)O(10381). Decay Mode: p. E(level),Γ: From (1968Be31) ^{12}C(p,p):res where the 5/2^{-} and 7/2^{-} doublet partners are both analyzed. In (1968Be31) the authors find the level energies do not differ by more than 2 keV. See also E_x=10381 keV *8* (1971Hs03) ^{11}B(^{3}He,n) and 10350 keV *20* (1966Ch18) ^{11}B(^{3}He,n). J^{π}: From phase-shift analysis of ^{12}C(pol. p,p) (1968Be31).
10.36×10^{3}	7/2^{-}	76 keV	e mn S V	XREF: Others: AK, BA Γ_{p0}/Γ=0.81 (1968Be31) XREF: m(10.35E3). Decay Mode: p.

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Adopted Levels, Gammas (continued)

^{13}N Levels (continued)

E(level)	J^{π}	$T_{1/2}$ or Γ	XREF	Comments
				E(level),Γ: From (1968Be31) ^{12}C(p,p):res. See above comment.
				J^{π}: From phase-shift analysis of ^{12}C(pol. p,p) (1968Be31).
10833† *9*	1/2$^-$	75 keV *15*	E M O V	XREF: Others: AJ, AK, AX
				XREF: M(10.78E3)V(10.78E3)AX(10780).
				E(level): From (1971Hs03) ^{11}B(^{3}He,n).
				J^{π}: From L=0 ^{15}N(p,t) (1968Fl03).
				Γ: From (1980Pe13) ^{12}C(^{3}He,d).
11.3×10^3?‡ *1*	[3/2$^-$]‡	<200 keV	A	Decay Modes: p, α.
				E(level),J^{π},Γ: Deduced in (2024Bi01) ^{13}O β^++ε; if decay from this state is visible in the delayed proton spectrum of (2005Kn02), then (2024Bi01) suggest Γ<40 keV.
				Suggested to decay via α_0+^{9}B$_{g.s.}$, p+^{12}C$_{g.s.}$ and p+^{12}C(7654.7 MeV).
11530 *12*	5/2$^+$	430 keV *35*	E O S	XREF: Others: BA
				Γ_{p0}/Γ=0.70 *5* (1973Me03)
				XREF: BA(11.5E3).
				Decay Mode: p.
				E(level): From (1971Hs03) ^{11}B(^{3}He,n). See also E_x=11490 keV *50* (1973Me03) ^{12}C(p,p):res.
				J^{π}: From phase-shift analysis of ^{12}C(pol.p, p),(pol. p,p′) (1973Me03).
				Γ: From (1973Me03) ^{12}C(p,p):res.
11700 *30*	5/2$^-$	115 keV *30*	A M S V	XREF: Others: AB
				Γ_{p0}/Γ=0.60 *4* (1973Me03)
				XREF: M(11.65E3)V(11.1E3)AB(11.3E3).
				Decay Mode: p.
				E(level),J^{π},Γ: From (1973Me03) ^{12}C(p,p):res.
				J^{π}: From phase-shift analysis of ^{12}C(pol.p, p),(pol. p,p′) (1973Me03).
11740 *40*	3/2$^+$	250 keV *30*	P S	$\Gamma_{\gamma 0}$≈4.2 eV (1973Me12)
				Γ_{p0}/Γ=0.30 *5* (1973Me03)
				Decay Modes: γ, p.
				E(level),Γ: From (1973Me03) ^{12}C(p,p):res where the 3/2$^+$ and 3/2$^-$ doublet partners are both analyzed.
				J^{π}: From phase-shift analysis of ^{12}C(pol.p, p),(pol. p,p′) (1973Me03).
11740 *50*	3/2$^-$	530 keV *80*	O S	XREF: Others: AJ, AK, AR, AS, AX
				Γ_{p0}/Γ=0.55 *5* (1973Me03)
				XREF: O(11878)AK(11850)ar(11.86E3)AS(11.9E3)AX(11880).
				Decay Mode: p.
				E(level),Γ: From (1973Me03) ^{12}C(p,p):res. Other results associated with J^{π}=3/2$^-$ but reported with energies near the next highest level are E_x=11878 keV *12* (1971Hs03) ^{11}B(^{3}He,n), 11850 keV *40* (1969Ba06) ^{13}C(^{3}He,t) and 11880 keV *40* (1968Fl03) ^{15}N(p,t); these likely correspond to unresolved

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Adopted Levels, Gammas (continued)

^{13}N Levels (continued)

E(level)	J^{π}	$T_{1/2}$ or Γ	XREF	Comments
				$3/2^{-}$&$1/2^{+}$ states. Γ: See also 98 keV (2004Fu12) ^{13}C(^{3}He,t). ^{13}C(^{3}He,t). J^{π}: From phase-shift analysis of ^{12}C(pol.p, p),(pol. p,p′) (1973Me03).
11860 *40*	$1/2^{+}$	380 keV *50*	S	XREF: Others: AR, AT, AV Γ_{p0}/Γ=0.35 *5* (1973Me03) XREF: ar(11.86E3). Decay Mode: p. E(level),Γ: From (1973Me03) ^{12}C(p,p):res. J^{π}: From phase-shift analysis of ^{12}C(pol. p,p) (1973Me03); see also $J^{\pi}=3/2^{-}$ from L=0,2 ^{11}B(^{3}He,n) (1971Hs03).
12130 *50*	$7/2^{-}$	250 keV *30*	S V	XREF: Others: AB, BA Γ_{p0}/Γ=0.30 *5* (1973Me03) XREF: V(12.08E3)AB(12.6E3). Decay Mode: p. E(level),Γ: From (1973Me03) ^{12}C(p,p):res. See also E_x=12130 keV *60* (1972Ma72) ^{16}O(p,α). J^{π}: From phase-shift analysis of ^{12}C(pol.p, p),(pol. p,p′) (1973Me03).
12.4×10^{3}?‡ *1*	[$3/2^{-}$]‡		A	Decay Modes: p, α. E(level),J^{π}: Deduced in (2024Bi01) ^{13}O $\beta^{+}+\varepsilon$. Suggested to decay via $\alpha_0+^{9}B_{g.s.}$, α_1+^{9}B(1.8 MeV) and p+^{12}C(7654.7 MeV).
12558† *23*		>400 keV	O Z	XREF: Others: AL, BA XREF: ba(12.75E3). E(level),Γ: From (1971Hs03) ^{11}B(^{3}He,n).
12937 *24*		>400 keV	A O	XREF: Others: BA XREF: ba(12.75E3). E(level),Γ: From (1971Hs03) ^{11}B(^{3}He,n). Decay Mode: p. E(level): See nearby E_x=13260 keV *100* with Γ≈520 keV reported in (2005Kn02) ^{13}O β-p.
13.1×10^{3}?‡ *1*	[$1/2^{-}$,$5/2^{-}$]‡		A	Decay Modes: p, α. E(level),J^{π}: Deduced in (2024Bi01) ^{13}O $\beta^{+}+\varepsilon$. J^{π}: $1/2^{-}$ for α_4 decay through ^{9}B(2.78:$1/2^{-}$) is preferred. Suggested to decay via α_1+^{9}B(1.8 MeV), α_0+^{9}B(2.75 MeV) or α_0+^{9}B(2.78 MeV) and p+$^{12}C_{g.s.}$.
13.50×10^{3} *20*	$3/2^{+}$	≈6.5 MeV	P	XREF: Others: AH $\Gamma_{\gamma 0}$>1.1 keV (1973Me12) XREF: AH(12.8E3). Decay Modes: γ, p.

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Adopted Levels, Gammas (continued)

^{13}N Levels (continued)

E(level)	J^{π}	$T_{1/2}$ or Γ	XREF	Comments
				E(level),Γ: From (1973Me12) ^{12}C(p,γ). J^{π}: From ^{12}C(p,γ_0) (1973Me12) where detector(θ)=90° and γ_0 to $^{13}N_{g.s.}$(J^{π}=1/2$^-$) is observed; also strong interference with J^{π}=3/2$^+$ states at ^{13}N*(11.74, 14.05); assumed component of GDR. Γ: See also Γ≈7.9 MeV (1994Ha41) ^{13}C(π^+,π^0).
13650? *10*		<300 keV	E S	XREF: Others: BA XREF: S(13.5E3)BA(13.48E3). Decay Mode: p. E(level),Γ: From (2009Ch38) ^{9}Be(^{10}C,^{13}N). Γ: See also Γ≈500 keV (1961Na02) ^{12}C(p,p):res. and Γ≈ few hundred keV (1972Ma21) ^{16}O(p,α).
13.7×10^3?‡ *1*	[3/2$^-$]‡		A	Decay Modes: p, α. E(level),J^{π}: Deduced in (2024Bi01) ^{13}O β^++ε. Suggested to decay via α_0+$^{9}B_{g.s.}$, α_1+^{9}B(1.8 MeV), α_0+^{9}B(2.75 MeV) and p+^{12}C(7.6547 MeV).
14050 *20*	3/2$^+$	162 keV *16*	P ST	XREF: Others: AR T=1/2 (1976Me18) $\Gamma_{\gamma 0}$=3.7 eV *10* (1973Me12) Γ_{p0}/Γ=0.29 *7* (1976Me18) XREF: T(13962)AR(14.0E3). Decay Modes: γ, p, α. E(level): From (1976Me18) ^{12}C(p,p):res. See also E_x=14050 keV *80*. J^{π}: From phase-shift analysis of ^{12}C(pol. p,p) (1976Me18). Γ: From the average of Γ=157 keV *18* (1973Me12) ^{12}C(p,γ) and 180 keV *35* (1976Me18) ^{12}C(p,p):res.
15064.56 *40*	3/2$^-$	0.932 keV *28*	A C OP ST	XREF: Others: AJ, AK, AX T=3/2 (1969Ad02) $\Gamma_{\gamma 0}$=24.5 eV *15* (1975Ma21,1973Ad02) $\Gamma_{\gamma 1}\leq$2.82 eV (1975Ma21) Γ_{p0}/Γ=0.236 *12*; Γ_{p0}=220 eV *13* Γ_{p1}/Γ=0.150 *10*; Γ_{p1}=140 eV *10* Γ_{p2}/Γ=0.053 *15*; Γ_{p2}=49 eV *14* $\Gamma_{\alpha 0}/\Gamma$=0.049 *27*; $\Gamma_{\alpha 0}$=46 eV *25* $\Gamma_{\alpha 1}/\Gamma$=0.039 *39*; $\Gamma_{\alpha 1}$=36 eV *36* $\Gamma_{\alpha 2}/\Gamma$=0.072 *45*; $\Gamma_{\alpha 2}$=67 eV *42* Γ_{γ}=44.1 eV *35* Γ_{p}=651 eV *40* Γα=149 eV *61* XREF: AJ(15.1E3). Decay Modes: γ, p, α. E(level),Γ: From (1973Hu07) ^{12}C(p,p):res. E(level): See also E_x=15064 keV *4* (1969Le18) and 15068 keV *8* (1969Ad02).

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Adopted Levels, Gammas (continued)

^{13}N Levels (continued)

E(level)	J^{π}	$T_{1/2}$ or Γ	XREF		Comments
					Γ: See also Γ=1.10 keV *9* (1975Hi07) ^{12}C(p,α). Beginning in (1981Aj01) the value Γ=0.86 keV *12* was given in the evaluations. This value is derived in (1977Ma16) using their measured $\Gamma_{p0}\Gamma_{\gamma 0}/\Gamma$=5.79 eV *20* value. J^{π}: From L=0 ^{11}B(^{3}He,n) (1971Hs03) and phase-shift analysis of (1969Le18). Γ_p,Γα: Branching ratios for p- and α-decay branches are from (1973Ad02); partial widths are deduced using these and Γ=0.932 keV *28*. Γ_p: See also $\Gamma_p(\rightarrow{}^{12}$C(9.6 MeV))/Γ=0.096 *14* and $\Gamma_p(\rightarrow{}^{12}$C(10.8 MeV))/Γ=0.164 *36* 1967AdZY; these imply Γ_p ($\rightarrow{}^{12}$C(9.6 MeV))=89.5 eV *5* and $\Gamma_p(\rightarrow$10.8 MeV)=153 eV *34*. Hence Γ_p=651 eV *40* for all proton branches. $\Gamma_{\gamma 0}$: $\Gamma\gamma_0$=24.5 eV *15* is obtained by combining Γ_{p0}/Γ=0.236 *12* (1973Ad02) with $\Gamma_{p0}\Gamma\gamma 0/\Gamma$=5.79 eV *20* (1975Ma21). Γ_γ: Γγ=44.1 eV *35* from $\Gamma\gamma_0$=24.5 eV *15* $\Gamma\gamma_1\leq$2.82 eV *30* and $\Gamma\gamma_{(2+3)}$=19.6 eV *14* (1975Ma21,1973Ad02).
15.30×10^3 *20*	(3/2$^+$)	0.35 MeV *14*	A	P	$\Gamma_{\gamma 0}\geq$0.5 eV (1973Me12) $\Gamma_{p0}/\Gamma\approx$1.0 (2005Kn02) XREF: A(?). Decay Modes: γ, p. E(level),Γ: From (1973Me12) ^{12}C(p,γ). J^{π}: From ^{12}C(p,γ_0) (1973Me12) θ_γ=90° and γ_0 to $^{13}N_{g.s.}$(J^{π}=1/2$^-$) is observed. See also (3/2$^-$) in (2005Kn02) ^{13}O β-p; but note the reported %Iβ=0.004 *3* intensity corresponds to perhaps three counts in a region where no background contribution is considered.
16000 *30*	7/2$^+$	135 keV *90*		ST	XREF: Others: AK T=1/2 (1967Ku02,1976Me18) Γ_{p0}/Γ=0.05 *4* (1976Me18) XREF: AK(15980). Decay Modes: p, α. E(level): From the average of E_x=16010 keV *40* (1973Me12) ^{12}C(p,p):res and E_x=15980 keV *50* (1969Ba06) ^{13}C(^{3}He,t). See also E_x=16 MeV and Γ=500 keV (1964Da03) ^{12}C(p,p):res. J^{π}: From phase-shift analysis of ^{12}C(pol. p,p) (1976Me18). Γ: From (1973Me12). See also Γ≈100 keV (1969Le18) ^{12}C(p,α) and ≈163 keV (2004Fu12) ^{13}C(^{3}He,t).
16.6×10^3 *1*		<350 keV	E		Decay Mode: α. E(level),Γ: From (2009Ch38). Decays to α+^{9}B(2.345).
17.4×10^3				S	Decay Mode: p. E(level): From (1976Be28) ^{12}C(p,pγ(12.71 MeV)).

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Adopted Levels, Gammas (continued)

^{13}N Levels (continued)

E(level)	J^{π}	$T_{1/2}$ or Γ	XREF	Comments
17680 *30*		1212 keV *74*	P	XREF: Others: AB, AK, AL XREF: P(18.1E3)AB(16.2E3)AL(17.5E3). E(level),Γ: From (2004Fu12) ^{13}C(^{3}He,t). Decay Modes: γ, p. E(level),J^{π}: (1988Vo08) ^{12}C(^{13}C,^{12}B) suggests a broad (5/2^{+}) GDR component near E_x=16.2 MeV.
18130 *17*	3/2^{+}	287 keV *36*	S	XREF: Others: AK T=1/2 (1967Ku02,1976Me18) Γ_{p0}/Γ=0.08 *2* (1976Me18) Decay Mode: p. E(level): From the average of E_x=18150 keV *30* (1976Me18) ^{12}C(p,p):res and 18120 keV *20* (2004Fu12) ^{13}C(^{3}He,t). J^{π}: From phase-shift analysis of ^{12}C(pol. p,p) (1976Me18). Γ: From the average of Γ=322 keV *75* (1976Me18) and 276 keV *41* (2004Fu12).
18170 *20*	1/2^{-}	225 keV *50*	ST	T=1/2 (1976Me18) Γ_{p0}/Γ=0.24 *6* (1976Me18) XREF: T(18232). Decay Modes: p, α. E(level),Γ: From (1976Me18) ^{12}C(p,p):res. See also E_x=18232 keV and Γ=300 keV in (1969Le18) ^{12}C(p,α). J^{π}: From phase-shift analysis of ^{12}C(pol. p,p) (1976Me18).
18405 *5*	3/2^{+}	66 keV *8*	0 ST	XREF: Others: AK T=3/2 (1967Ku02,1969Ad02) Γ_{p0}/Γ=0.25 (1969Le18) XREF: O(18.44E3)T(18352). Decay Modes: p, α. E(level),Γ: See comments in ^{12}C(p,p):res. Values are apparently from (1968Sn03) and a private communication reported in (1970Aj04). See also E_x=18370 keV *10* (2004Fu12) ^{13}C(^{3}He,t) and 18440 keV *40* (1969Ad02) ^{11}B(^{3}He,n). J^{π}: From phase-shift analysis of ^{12}C(p,p) (1969Le18).
18963 *8*	(3/2^{-},7/2^{+})	23 keV *5*	0 ST	T=3/2 (1967Ku02,1969Ad02) Γ_{p0}/Γ=0.017 (1969Le18) XREF: O(18.98E3). Decay Modes: p, α. E(level): From the average of E_x=18960 *9* see comments in ^{12}C(p,p):res and 18980 keV *20* (1969Ad02) ^{11}B(^{3}He,n). J^{π}: From phase-shift analysis in (1969Le18) ^{12}C(p,p). Γ: See discussion in ^{12}C(p,p):res related to (1968Sn03). See also Γ=40 keV *20* (1969Ad02).
19110[†] *10*		183 keV *41*		XREF: Others: AK E(level),Γ: From (2004Fu12) ^{13}C(^{3}He,t).

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Adopted Levels, Gammas (continued)

^{13}N Levels (continued)

E(level)	J^{π}	$T_{1/2}$ or Γ	XREF	Comments
19830 *20*	$5/2^{-}$	1542 keV *84*	T	XREF: Others: AK T=1/2 (1969Le18) Γ_{p0}/Γ=0.18 (1969Le18) Decay Modes: p, α. E(level),Γ: From (2004Fu12) ^{13}C(^{3}He,t). J^{π}: From phase-shift analysis of ^{12}C(p,p) (1969Le18).
19880	$7/2^{+}$	750 keV	ST	T=1/2 (1969Le18) Γ_{p0}/Γ=0.40 (1969Le18) XREF: T(19.88E3). Decay Modes: p, α. E(level): From (1969Le18) ^{12}C(p,p),(p,α). J^{π}: From (1979Ga13) analysis of σ(θ) and $A_y(\theta)$ from ^{12}C(pol. p,p),(pol. p′) See also $3/2^{+}$ in phase-shift analysis (1969Le18). Γ: From (1979Ga13) ^{12}C(p,p):res. See also Γ=520 keV (1969Le18).
20.2×10^{3}	$5/2^{-}$	1 MeV	S	E(level),Γ: From (1979Ga13) ^{12}C(p,p):res. Decay Mode: p. J^{π}: From (1979Ga13) analysis of σ(θ) and $A_y(\theta)$ from ^{12}C(pol. p,p),(pol. p′).
20.90×10^{3} *30*	$1/2^{+}$	1.2 MeV	P RS	$\Gamma_{\gamma0}$>0 eV (1976Be28) $\Gamma_{p0}/\Gamma\approx$0.1 (1973Me12) XREF: P(20.5E3). Decay Modes: γ, p, (n). E(level): From (1973Me12) ^{12}C(p,p):res. E(level): In ^{12}C(p,γ) broad Γ≈1.2-4.0 MeV groups are reported with E_x ranging from 20.0 MeV to 20.8 MeV. J^{π}: From (1979Ga13) analysis of σ(θ) and $A_y(\theta)$ from ^{12}C(pol. p,p),(pol. p′). Γ: From (1979Ga13) ^{12}C(p,p):res.
21200 *10*	$5/2^{-}$	581 keV *44*	S	XREF: Others: AK XREF: S(21.4E3). Decay Mode: p. E(level),Γ: From (2004Fu12) ^{13}C(^{3}He,t). The previous evaluation accepted a state at E_x=21.4 MeV with Γ=750 keV (1979Ga13) ^{12}C(p,p):res; the evaluator assumes (2004Fu12) observed the same level. J^{π}: From (1979Ga13) analysis of σ(θ) and $A_y(\theta)$ from ^{12}C(pol. p,p),(pol. p′).
21.7×10^{3}	$(3/2^{+})$		S	Decay Mode: p. E(level): From ^{12}C(p,p):res. See for discussion on (1964Ta15) analysis of (1963Di16) data and see (1979Ga13). J^{π}: From (1979Ga13) analysis of σ(θ) and $A_y(\theta)$ from ^{12}C(pol. p,p),(pol. p′) and (1964Ta15).
22140 *10*	$1/2^{+}$	1706 keV *82*	P S	XREF: Others: AB, AK $\Gamma_{p0}/\Gamma\approx$0.1 (1973Me12) XREF: S(22.4E3)AB(22.5E3). Decay Modes: γ, p.

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Adopted Levels, Gammas (continued)

^{13}N Levels (continued)

E(level)	J^{π}	$T_{1/2}$ or Γ	XREF	Comments
				E(level),Γ: From (2004Fu12) ^{13}C(^{3}He,t). The previous evaluation accepted a state at E_x=22.4 MeV *5* with Γ≈1 MeV (1973Me12, 1979Ga13) ^{12}C(p,p):res; the evaluator assumes (2004Fu12) observed the same level. J^{π}: From (1979Ga13) analysis of $\sigma(\theta)$ and $A_y(\theta)$ from ^{12}C(pol. p,p),(pol. p′). E(level),J^{π}: (1988Vo08) ^{12}C(^{13}C,^{12}B) suggests a broad ($3/2^{+}$) GDR component near E_x=22.5 MeV.
23.3×10^{3} †		10.4 MeV		XREF: Others: AH T=3/2 (1994Ha41) E(level),Γ: From (1994Ha41). Represents the T=3/2 giant resonance built on $^{13}C_{g.s.}$
23.3×10^{3}	$3/2^{-}$	500 keV	H J P	XREF: P(23.2E3). Decay Modes: γ, p, ^{3}He. E(level): From E_x=23.2 MeV (1976Be28) ^{12}C(p,γ), 23.25 MeV (1987Ba34) ^{10}B(^{3}He,^{3}He) and 23.3 MeV (1966Pa10) ^{10}B(^{3}He,p_0). In the prior evaluation the (p,γ) resonance was listed separately with E_x=23 MeV. J^{π}: From L=1 and R-matrix analysis in (1987Ba34) ^{10}B(^{3}He,^{3}He). Γ: From Γ=500 keV (1987Ba34) ^{10}B(^{3}He,^{3}He) and Γ=500 keV (1966Pa10) ^{10}B(^{3}He,p_0). See also Γ≈1 MeV (1976Be28) ^{12}C(p,γ).
23830 *40*	$3/2^{-}$	346 keV *38*	H J	XREF: J(23.87E3). Decay Modes: p, ^{3}He. E(level): From (1964Ku09) ^{10}B(^{3}He,p). J^{π}: From L=1 and R-matrix analysis in (1987Ba34) ^{10}B(^{3}He,^{3}He). Γ: From (1956Sc01) ^{10}B(^{3}He,p).
23.93×10^{3}	$13/2^{-}$	20 keV	J	Decay Mode: ^{3}He. E(level),Γ: From (1987Ba34) ^{10}B(^{3}He,^{3}He). J^{π}: From L=3 and R-matrix analysis in (1987Ba34) ^{10}B(^{3}He,^{3}He).
24.1×10^{3}	$7/2^{-}$	≈500 keV	H JK RS	XREF: H(24.5E3)J(24.40E3)R(24E3). Decay Modes: (p), n, ^{3}He, α. E(level),Γ: From (1966Lo16) ^{12}C(p,p):res. In the previous evaluation, Γ=700 keV from (1987Ba34) was listed, but this resonance was not covered in the energy range of that study; inclusion of the resonance did improve the fit in that study, but the value is not accepted here. Other reported widths are Γ=750 keV (1970Gi04) ^{10}B(^{3}He,α), ≤500 keV (1966Lo16) ^{12}C(p,p):res. J^{π}: From Legendre polynomial analysis of ^{10}B(^{3}He,α) in (1987Ba34) and scattered proton polarization results from ^{12}C(p,p) (1966Lo16).
24500 *40*		2.46 MeV *22*	P	XREF: Others: AK $\Gamma_{\gamma 0}$>0 eV (1976Be28) Decay Modes: γ, p, ^{3}He.

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Adopted Levels, Gammas (continued)

^{13}N Levels (continued)

E(level)	J^{π}	$T_{1/2}$ or Γ	XREF	Comments
				E(level): From (2004Fu12) ^{13}C(^{3}He,t). See also E_x=24.5 MeV (1963Fi07,1991Co07) ^{12}C(p,γ). Γ: From (2004Fu12) ^{13}C(^{3}He,t). See also Γ=3.5 MeV (1991Co07).
24.8×10^{3}		120 keV	H	Decay Modes: p, ^{3}He. E(level),Γ: From (1956Sc01) ^{10}B(^{3}He,p).
25.64×10^{3} *10*	(3/2)$^{-}$	184 keV *60*	H S	Decay Modes: p, ^{3}He. E(level),Γ: From (1964Ku09). J^{π}: From (1967Sc11) where L=1 waves in the entrance and exit channels are found in ^{12}C(p,p′)^{12}C(15.11 MeV: 1^{+}),
25900		1.0 MeV	GHI K	XREF: H(26.1E3)K(26.1E3). Decay Modes: γ, p, (n), d, ^{3}He, α. E(level),Γ: From discussion in (1972Be56) finding ^{10}B(^{3}He,X) where X=α_0, d_0, $p_{0,2,3}$ γ_0 and (n). J^{π}: 7/2^{-} is found by (1970Gi04), where both Legendre polynomial analysis of ^{10}B(^{3}He,α) and analyzing power data in ^{12}C(pol. p,p) are discussed. However, the level is found to γ decay to $^{13}C_{g.s.}$ so this is unlikely. See also J≤3/2 (1966Pa10) ^{10}B(^{3}He,p) and see discussion in (1972Be56).
26.90×10^{3} *90*		4.38 MeV *47*	RS	XREF: Others: AK Decay Modes: p, (n). E(level),Γ: From (2004Fu12) ^{13}C(^{3}He,t). See also E_x=26.87 MeV (1964Ta15) analysis of (1963Di16) and 26.84 (1966Cr04) in ^{12}C(p,p):res.
28000			GH K	Decay Modes: (γ), p, ^{3}He, (α). E(level): From discussion in (1972Be56) finding ^{10}B(^{3}He,X) where X=α_0, p_0 and γ_0, and (1966Pa10) ^{10}B(^{3}He,p). J^{π}: 9/2^{+} is found by (1970Gi04), where both Legendre polynomial analysis of ^{10}B(^{3}He,α) and analyzing power data in ^{12}C(pol. p,p) are discussed. However, the level is found to γ decay to $^{13}C_{g.s.}$ so this is unlikely. See also J≤7/2 (1966Pa10) ^{10}B(^{3}He,p) and see discussion in (1972Be56).
31.7×10^{3}?			P S	XREF: P(31.9E3). Decay Modes: γ, p. E(level): From the average of E_x=31.4 MeV (1976Fe11) ^{12}C(p,p′γ(4.44)) and 31.9 MeV from the average of (1963Fi07, 1976Fe11, 1991Co07) values in ^{12}C(p,γ). In earlier evaluations this level is listed with E_x=31 MeV. The level appears distinct from the E_x=32 MeV level, since it is not populated in ^{10}B(^{3}He,p) reactions.
32000		≈2000 keV	G I K	$\Gamma_{\gamma 0}$>0 eV (1976Be28) Decay Modes: γ, d, ^{3}He, α. E(level),Γ: From discussion in

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Adopted Levels, Gammas (continued)

^{13}N Levels (continued)

E(level)	J^{π}	$T_{1/2}$ or Γ	XREF	Comments
				(1972Be56) finding ^{10}B(^{3}He,X) where X=α_0, $d_{4,5}$ and γ_0.

† Decay mode not specified.

‡ Four new states are suggested at ^{13}N*(11.3, 12.4, 13.1 and 13.7 MeV) in ^{13}O β^{+}p (2023Bi03, 2024Bi01). The authors indicate an independent branching-ratio measurement is not reliable, and no intensity is assigned in the present evaluation. Assuming these are allowed decays, J^{π} arguments are given based on the various particle emission decay modes.

Adopted Levels, Gammas (continued)

$\gamma(^{13}N)$

Additional information 1.

E_i(level)	J_i^π	E_γ[‡]	I_γ	E_f	J_f^π	Mult.	δ[#]	α[†]	Comments
2367.8	$1/2^+$	≈2367.7	100	0.0	$1/2^-$	[E1]		2.67×10^{-5} *4*	α(K)≈4.38×10^{-7}; α(L)≈2.153×10^{-8} α(IPF)≈0.000888 α(K)=1.365×10^{-6} *19*; α(L)=6.72×10^{-8} *9* α(IPF)=2.525×10^{-5} *35* Γ_γ=0.49 eV *2* B(E1)(W.u.)=0.0989 *47* Γ_γ: From Γ_γ=0.52 eV *4* (2002SeZY) ^{208}Pb(^{13}N,^{12}C+p), and the ^{12}C(p,γ) values 0.45 eV *5* (1968Ri16), 0.53 eV *5* (1992Hi14), 0.49 eV *3* (2023Sk02), 0.48 eV *3* (2023Ke11: includes 2008Bu19).
3500.4	$3/2^-$	1135.6	8.4	2367.8	$1/2^+$	[E1]			Γ_γ≈0.043 eV (2023Ke11,1974Ro29) B(E1)(W.u.)=0.079
		3500.3	100	0.0	$1/2^-$	[M1+E2]	−0.09 *2*	8.45×10^{-4} *12*	α(K)=3.41×10^{-7} *5*; α(L)=1.677×10^{-8} *23* α(IPF)=0.000845 *12* Γ_γ≈0.49 eV (2023Ke11) B(M1)(W.u.)≈0.55; B(E2)(W.u.)≈5 Mult.,δ: From angular distribution and a_2=−0.64 *4* in (1974Ro29) ^{12}C(p,γ) . See also δ=−0.092 (1963Yo06).
10.26×10^3	$(1/2^+,3/2^+)$	≈10256		0.0	$1/2^-$				Γ_γ>0.6 eV
11740	$3/2^+$	11734		0.0	$1/2^-$	[E1]			Γ_γ≈4.2 eV B(E1)(W.u.)≈0.007
13.50×10^3	$3/2^+$	≈13492		0.0	$1/2^-$				Γ_γ≥1.1 keV
14050	$3/2^+$	14042		0.0	$1/2^-$	[E1]			Γ_γ=3.7 eV *10* B(E1)(W.u.)=3.6×10^{-3} *10*
15064.56	$3/2^-$	11558		3500.4	$3/2^-$	[M1]			B(M1)(W.u.)≤0.61 $\Gamma\gamma_{(2+3)}$=19.6 eV *14*.
		12693	<2.82	2367.8	$1/2^+$	[E1]			Γ_γ≤2.82 eV B(E1)(W.u.)<3.7×10^{-3}
		15055	100	0.0	$1/2^-$	[E2+M1]	−0.115 *21*		Γ_γ=24.5 eV *15* B(M1)(W.u.)=0.325 *18*; B(E2)(W.u.)=0.27 *10* Mult.,δ: From $\Gamma\gamma$0(M1)=24.2 eV *15* and $\Gamma\gamma$0(E2)=0.32 eV *12*; δ^2=0.013 *5* deduced from ^{12}C(p,γ_0) angular distributions in (1975Ma21, 1977Ma16). See also δ^2=0.095 7 (1968Di04).
15.30×10^3	$(3/2^+)$	≈15290		0.0	$1/2^-$				Γ_γ≥0.5 eV
17680		17667		0.0	$1/2^-$				

Adopted Levels, Gammas (continued)

$\gamma(^{13}N)$ (continued)

E_i(level)	J_i^π	E_γ[‡]	E_f	J_f^π	Comments
20.90×10^3	$1/2^+$	20.90×10^3	0.0	$1/2^-$	
22140	$1/2^+$	19756	2367.8	$1/2^+$	From (1976Be28) $^{12}C(p,\gamma_1)$.
23.3×10^3	$3/2^-$	23.3×10^3	0.0	$1/2^-$	
24500		21.0×10^3	3500.4	$3/2^-$	
25900		25872	0.0	$1/2^-$	From (1972Be56) $^{10}B(^3He,\gamma_0)$.
28000		27967	0.0	$1/2^-$	From (1972Be56) $^{10}B(^3He,\gamma_0)$.
$31.7\times10^{3?}$		28.2×10^3	3500.4	$3/2^-$	
		31.7×10^3	0.0	$1/2^-$	
32000		31958	0.0	$1/2^-$	From (1972Be56) $^{10}B(^3He,\gamma_0)$.

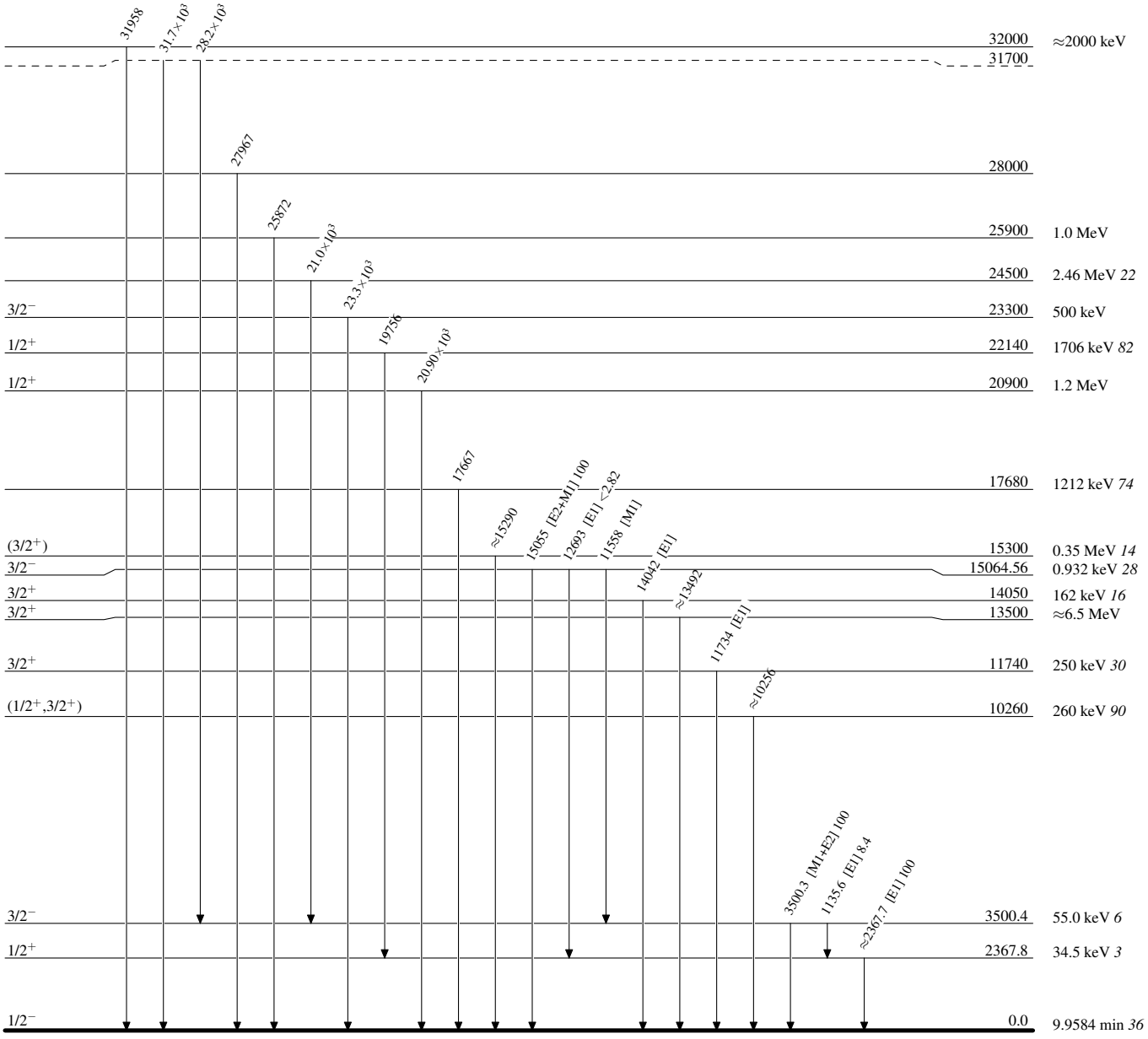
† Additional information 2.
‡ From level-energy difference.
# The sign has been changed, where necessary, from that given in (1991Aj01) in order to conform to the convention used in the nuclear data sheets.

$^{13}_{7}N_{6}$-16

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{13}_{7}N_{6}$