Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. G. Sheu, J. H. Kelley, J. Purcell	ENSDF	5-Aug-2021

Q(β^-)=−2760.47 *25*; S(n)=4143.08; S(p)=13781.6 *23*; Q(α)=−6358.69 2021Wa16
S(n),Q(α): uncertainty smaller than 0.5 eV.

^{17}O was first identified by (Blackett: Proc. Roy. Soc. A 107 (1925) 349); see (2012Th01).

Past evaluations: 1959Aj76, 1971Aj02, 1977Aj02, 1982Aj01, 1986Aj04 1993Ti07. In the present evaluation, we relied heavily on keywords and descriptions provided in the Nuclear Science Reference database (2011Pr03).

We acknowledge fruitful discussions with D.J. Millener.

The atomic mass of ^{17}O is 16.9991317566 u *9* (2010Mo29). See recent AME Mass evaluations in (2012Wa16, 2017Wa10).

Theory:
See Shell model analyses in: 1963Pa03, 1966Ar10, 1966Br04, 1968Bi07, 1969Bo37, 1969Ul03, 1971Mu23, 1973Re17, 1979Co10, 1992Ja13, 1993Po11, 1997Pr05, 2005Vo01, 2006Ma17, 2006Vo14, 2012Yu07, 2016Pa05, 2018Ji07, 2018Ti08, 2019Sm04, 2019Ti04, 2020Fo04, 2020Ma25, 2020Mi15, 2020So01.
See Cluster model analyses in: 1995Ho13, 2003Ma70, 2003Mb05, 2004Mc02, 2005Wl02, 2006Go22, 2008ToZV, 2020Ca21.
See other theoretical analyses in: 1962Ma23, 1963Fa03, 1963Un01, 1965Ma16, 1966De18, 1966Ma12, 1967Go04, 1969De16, 1970Ry02, 1971Au08, 1971Hs02, 1971Ka40, 1972Be22, 1972En03, 1974HsZX, 1974Ri09, 1974Sa05, 1976Ma05, 1977Ho04, 1977Po16, 1978Fo22, 1978Kr02, 1979Kr05, 1980Hy03, 1980Va05, 1981Au04, 1986Be36, 1986Ed03, 1986To13, 1991Sk02, 1992Ba50, 1994Ma34, 1994Wa02, 1996Ti02, 1997Re07, 2000Bh07, 2005Ni24, 2006Id01, 2007Ch73, 2007Gu03, 2014Ho08, 2016De38, 2016Ho14, 2017Ti04.

See discussion on ^{17}O-^{17}F mirror nuclei and analog states in: 1970Wa01, 1981Sh17, 1981Ta09, 1983Ma38, 1984Sh30, 1985Sh24, 1994Sa45, 1994Sh20, 1995Fo18, 1996Bu20, 1998Ao02, 1999Ts06, 1999Ki28, 2001Ag09, 2001Au01, 2001Sh17, 2002Zh28, 2003Ti13, 2003Zh29, 2004Fu04, 2005Ti07, 2008Li53, 2010Ha11, 2011Ti09, 2012Mu14, 2012Ok02, 2017De08, 2017Sv01, 2018Do02, 2018Fo04, 2019Mu05, 2020De03.

See discussion on the nuclear and charge radii in:
experimental: 2000Fa12, 2001Oz03, 2001Oz04, 2012Ra29.
Using elastic electron scattering the ratio of the rms charge radii of ^{17}O to ^{16}O was determined to be 0.995 *6* as reported in (1970Si02) and 1.0015 *25* as reported in (1978Ki01). In (1979Mi09), it is reported that the charge radius of ^{16}O is larger than that of ^{17}O by 0.008 fm *7*.
theory: 1969No03 (R^{charge}_{RMS}=2.70 fm (theory)), 1973Ho32, 1979Br17 2013Fo09, 2017Ah08(R^{matter}_{RMS}=2.73 fm *4*), 2018Fo12, 2019Fo08, 2019Ra09, 2019Sa02, 2020An13.

Moments and hyperfine structure:
Experimental results on μ:
1951Al08: The ratio of the resonance frequency of ^{17}O from H_2O to the resonance frequency of D^2 from D_2O was determined to be $\nu(^{17}O)/\nu(D^2)$=0.88313 *4*; the spin of ^{17}O is I=5/2; μ=−1.89280 nm *19*.
2005An15: ^{17}O measured NMR spectra; deduced μ=−1.8935428 *95*.
Theory, calculated μ dipole moment:
1968Pe16, 1968Sc18, 1972Gl06, 1973Er03, 1974Ha27, 1977Ko28, 1980Br13, 1980Ch35, 1983Zi01, 1984Bo11, 1984Zi04, 1985Bl20, 1985Zi05, 1987It01, 1988Ho16, 1989Ch24, 1989Ne02, 1990Mo36, 1991Bl14, 1994Li55, 1999Ga57, 2003Sm02, 2005An15, 2006Ya12, 2009Li64, 2012Fu06, 2012We11, 2014Ac01, 2017Sa48.

Experimental results on Q:
1957Ka68: measured Q=−0.0265 b *30*.
1957St93: measured Q=−0.026 b *9*.

Adopted Levels, Gammas (continued)

1969Sc34: measured Q=−0.025 b *78*. See also (1969Sc33).
92Su: Sundholm and Olsen, J. Phys. Chem. 96 (1992) 627: measured Q=−0.02558 b *22*.
2008Py02, 2013De06: ^{17}O compiled evaluated ground-state quadrupole moments: (2008Py02) considers Q=−25.58 mb *22* as the most accurate value (Su92: J. Phys. Chem. 96 (1992) 627).
Theory, calculated Q quadrupole moment: 1969Ke07, 1969Go12, 1969Ma38, 1986Ca27, 1991Zh06, 1993Ki05, 1993Ki22, 1997Si10, 1997Si34, 2003Ra04, 2003Sm02, 2003Ra09, 2007Be09, 2017Sa48.

See moment compilations in: 1969Fu11, 1989Ra17, 2008Py02, 2005St25, 2015St03, 2016St14, 2019StZV, 2020StZV.

Other experimental results not listed elsewhere:
1981Ma16: measured spin-dependent neutron scattering length.

^{17}O Levels

Cross Reference (XREF) Flags

A	^{17}N β^- decay	V	^{14}C(^{3}He,X): res	AP	^{16}O(^{13}C,^{12}C)
B	^{17}F β^+ decay	W	^{14}C(α,n)	AQ	^{16}O(^{14}N,^{13}N)
C	^{18}N β^-n decay	X	^{14}C(^{6}Li,t)	AR	^{16}O(^{18}O,^{17}O)
D	^{2}H(^{16}O,p)	Y	^{14}N(t,γ)	AS	^{17}O(γ,γ')
E	^{6}Li(^{13}C,d)	Z	^{14}N(α,p),^{4}He(^{14}N,γ^{17}O)	AT	^{17}O(γ,n),^{17}O(γ,p)
F	^{6}Li(^{18}O,^{17}O)	Others:		AU	^{17}O(e,e$'$)
G	^{7}Li(^{18}O,^{17}O)	AA	^{14}N(^{6}Li,^{3}He)	AV	^{17}O(π^+,$\pi^{+\prime}$),(π^-,$\pi^{-\prime}$)
H	^{9}Be(^{13}C,α^{13}C)	AB	^{15}N(d,p),(d,d),(d,γ)	AW	^{17}O(p,p$'$)
I	^{9}Be(^{16}O,^{17}O),^{16}O(^{9}Be,^{17}O)	AC	^{15}N(d,α)	AX	^{17}O(^{3}He,^{3}He)
J	^{12}C(^{6}Li,p)	AD	^{15}N(^{3}He,p)	AY	^{17}O(^{16}O,^{16}O),(^{16}O,^{16}O$'$)
K	^{12}C(^{7}Li,d)	AE	^{15}N(α,d)	AZ	^{18}O(γ,n)
L	^{12}C(^{9}Be,α),(^{11}B,^{6}Li)	AF	^{15}N(^{11}B,^{9}Be)	BA	^{18}O(p,d)
M	^{13}C(α,γ)	AG	^{16}O(n,γ),(n,n)	BB	^{18}O(d,t)
N	^{13}C(α,n)	AH	^{16}O(n,γ):E=thermal	BC	^{18}O(^{3}He,α)
O	^{13}C(α,n),(α,α)	AI	^{16}O(n,γ):E(n)=10-80 keV	BD	^{19}F(n,t),(d,α),(α,^{6}Li)
P	^{13}C(^{6}Li,d)	AJ	^{16}O(n,n),(n,n$'$)	BE	^{19}F(p,^{3}He)
Q	^{13}C(^{7}Li,t)	AK	^{16}O(n,α)	BF	^{20}Ne(n,α)
R	^{13}C(^{9}Be,αn),(^{9}Be,^{5}He)	AL	^{16}O(p,π^+)	BG	^{181}Ta(^{18}O,^{17}O)
S	^{13}C(^{11}B,^{7}Li)	AM	^{16}O(d,p),(d,pγ)	BH	^{208}Pb(^{17}O,^{17}O$'$):CoulEx
T	^{13}C(^{13}C,^{9}Be)	AN	^{16}O(α,^{3}He),(α,n^{3}He)		
U	^{13}C(^{17}O,^{17}O)	AO	^{16}O(^{7}Li,^{6}Li)		

E(level)[†]	J$^\pi$	T$_{1/2}$	XREF	Comments
0	5/2$^+$	stable	ABCDEFG IJKL PQRS UVWXYZ	XREF: Others: AA, AD, AE, AF, AG, AH, AI, AL, AM, AN, AO, AP, AQ, AR, AW, AX, AY, AZ, BA, BB, BD, BE, BG, BH T=1/2 μ=−1.893543 *10* (2005An15) Q=−0.02558 *22* Q: From (Sundholm and Olsen, J. Phys. Chem. 96 (1992) 627). See (2008Py02, 2013De06).
870.756 *20*	1/2$^+$	179.6 ps *27*	AB DEFG IJKLM PQRS VWXYZ	XREF: Others: AA, AD, AE, AF, AG, AH, AI, AL, AM, AN, AO, AP, AQ, AR, AU, AV, AW, AX, AY, AZ, BA, BB, BD, BE, BF, BG, BH %IT=100 E(level): From recoil corrected E$_\gamma$. T$_{1/2}$: weighted average of 170 ps *7* from ^{14}N(α,p)

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)†	J^{π}	$T_{1/2}$	XREF	Comments
				(1974Sc09) and 180.4 ps *20* from ^{16}O(d,p) (see discussion). J^{π}: From ^{16}O(d,p).
3055.40 *6*	1/2^{-}	110 fs *+24−21*	A EFG JKL PQRS WX Z	XREF: Others: AA, AD, AF, AH, AI, AL, AM, AN, AO, AR, AU, AV, AW, AZ, BA, BB, BD, BE, BF, BG %IT=100 E(level): From recoil corrected least squares fit E_{γ}=2184.49 *5* and 870.732 *20*. See also 3054.98 *20* from ^{16}O(d,p) (2015Pi05). $T_{1/2}$: From 80 fs *+60−40* from ^{14}C(α,n) (1964Al11) and 110 fs *+28−21* from ^{181}Ta(^{18}O,^{17}Oγ) (2020Zi03). J^{π}: From ^{17}N β- decay.
3842.8 *4*	5/2^{-}	92×10^{-3} eV *6*	A EFG IJKL PQRSTU WX Z	XREF: Others: AA, AD, AE, AF, AL, AM, AN, AO, AS, AU, AV, AZ, BA, BB, BD, BE, BF, BG %IT=100 E(level): From 3842.76 keV *42* from ^{16}O(d,p) (1990Pi05), 3842.9 keV *4* from ^{19}F(d,α) (2015Fa12), 3844 keV *7* from ^{12}C(^{6}Li,p) (1986Sm10). $T_{1/2}$: From ^{17}O(γ,γ′) (1994Mo18). J^{π}: From ^{14}C(^{6}Li,t) (1981Cu11).
(4143.27 *13*)	1/2^{+}			XREF: Others: AH E(level): From ^{16}O(n,γ):E=thermal capture state (2016Fi04).
4551.8 *7*	3/2^{-}	38.7 keV *28*	A EFG JKL PQ S X Z	XREF: Others: AA, AD, AE, AG, AJ, AL, AM, AO, AT, AU, AV, BA, BB, BD, BF %n=99.9905; %IT=9.5×10^{-3} $\Gamma_{\gamma0}$=1.80 eV *35* (1992Ig01); $\Gamma_{\gamma1}$=1.85 eV *35* Γ_{γ}: From (1992Ig01). See also Γ_{γ}<4.0 eV (1971Al09) and $\Gamma_{\gamma0}$=0.42 eV (1978Ho16). E(level): From 4551.4 keV *7* from ^{19}F(d,α) (2015Fa12), 4553.8 keV *16* from ^{16}O(d,p) (1990Pi05), 4551 keV *4* from ^{16}O(n,n) (1958Hu18), 4555 keV *8* from ^{12}C(^{6}Li,p) (1986Sm10) and 4544 keV *10* from ^{16}O(n,n) (1971Al09). Γ: weighted average of 39 keV *3* from ^{16}O(n,n) (see discussion), 40 keV *5* from ^{16}O(d,p) (1957Br82), and 38.1 keV *28* from ^{19}F(d,α) (2015Fa12). J^{π}: From ^{16}O(n,n) (1973Jo01).
5086.8 *9*	3/2^{+}	90 keV *3*	A DEF IJKL PQ Z	XREF: Others: AA, AD, AJ, AL, AM, AN, AQ, AT, AU, BA, BB %n=99.9988; %IT=1.1×10^{-3} $\Gamma_{\gamma0}$=1.0 eV (1978Ho16) E(level): From 5089 keV *1* from ^{2}H(^{16}O,p) (2013Al14), 5082 keV *8* from ^{16}O(n,n) (1958Hu18), 5084.4 keV *9* from ^{16}O(d,p) (1990Pi05) and 5087.7 keV *10* from ^{19}F(d,α) (2015Fa12). Γ: weighted average of 90 keV *5* (lab) from

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)†	Jπ	$T_{1/2}$	XREF	Comments
				^{16}O(n,n) (see discussion), 95 keV *5* from ^{16}O(d,p) (1957Br82), and 88 keV *3* from ^{19}F(d,α) (2015Fa12). Jπ: From ^{16}O(n,n) (1973Jo01).
5216.18 *40*	9/2⁻	<0.1 keV	E JKL PQ T X Z	XREF: Others: AA, AD, AE, AF, AG, AL, AM, AN, AR, AU, AV, BA, BD, BF %n≈100; %IT>0 E(level): From average of 5217 keV *8* from ^{12}C(^{6}Li,p) (1986Sm10), 5216.5 keV *4* from ^{19}F(d,α) (2015Fa12) and 5215.77 keV *45* from ^{16}O(d,p) (1990Pi05). Γ: This level is not observed in ^{16}O(n,n) (1973Fo11) leading to a width estimate of Γ<0.1 keV. Jπ: From ^{17}O(e,e′) (1987Ma52).
5387.1 *22*	3/2⁻	37.1 keV *24*	A EFG JKL Z	XREF: Others: AA, AD, AF, AJ, AM, AO, AT, AU, AV, BA, BB, BD, BF %n=99.9981; %IT=1.9×10^{-3} $\Gamma_{\gamma0}$=0.7 eV *4* (1979Jo05) XREF: AT(5430)BF(5.55E3). E(level): From discrepant values of 5380 keV *9* from ^{12}C(^{6}Li,p) (1986Sm10), 5377.9 keV *35* from ^{16}O(n,n) (see discussion), 5379.2 keV *14* from ^{16}O(d,p) (1990Pi05) and 5388.8 keV *6* from ^{19}F(d,α) (2015Fa12). Γ: weighted average of 31 keV *4* from ^{16}O(n,n) (see discussion), 28 keV *7* from ^{16}O(d,p) (1957Br82), and 39.0 keV *21* from ^{19}F(d,α)) (2015Fa12). Jπ: From ^{16}O(n,n) (1973Jo01).
5697.32 *33*	7/2⁻	3.4 keV *3*	DE IJK PQ X Z	XREF: Others: AA, AD, AE, AF, AG, AJ, AM, AN, AT, AU, AV, BD, BF %n=99.968; %IT=3.2×10^{-2} $\Gamma_{\gamma0}$=1.1 eV *4* (1979Jo05) XREF: J(5719)AT(5710). E(level): From 5697 keV *2* from ^{16}O(n,n) (1973Fo11) 5697.5 keV *5* from ^{19}F(d,α) (2015Fa12) and 5697.26 keV *33* from ^{16}O(d,p) (1990Pi05). Γ: From ^{16}O(n,n) (1973Fo11). Jπ: From ^{16}O(d,p) (1956Gr37,1961Ke02,1963Ya03,1964Sc12).
5732.07 *42*	(5/2⁻)	<1 keV	A E JK PQ T Z	XREF: Others: AA, AG, AJ, AL, AM, AT, AU, AV, BD %n≤100 XREF: J(5719)T(5.8E3)AT(5729). E(level): From 5732.79 keV *52* from ^{16}O(d,p) (1990Pi05), 5731.6 keV *4* from ^{19}F(d,α) (2015Fa12) and 5733 keV *2* from ^{16}O(n,n) (1973Fo11). Γ: From ^{16}O(n,n) (1973Fo11). Jπ: From ^{17}O(e,e′) (1987Ma52).

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)[†]	J^{π}	$T_{1/2}$	XREF	Comments
5869.62[#] *40*	3/2+[#]	6.6 keV *7*	A E JKL PQ T Z	XREF: Others: AA, AD, AG, AJ, AM, AN, AU, BD, BF %n≤100 XREF: K(5900)T(5.8E3). E(level): From 5869.7 keV *6* ^{19}F(d,α) (2015Fa13), 5869.07 keV *55* from ^{16}O(d,p) (1990Pi05). Γ: From ^{16}O(n,n) (1973Fo11). J^{π}: From ^{16}O(n,n) (1973Jo01).
5931.6 *15*	1/2−	32 keV *3*	A E JK PQ Z	XREF: Others: AA, AD, AG, AJ, AM, AU, BB, BD %n≤100 XREF: K(5900). E(level): From 5931.0 keV *11* from ^{19}F(d,α) (2015Fa12) and 5939 keV *4* from ^{16}O(n,n) (1973Fo11). Γ: weighted average of 32 keV *3* from ^{16}O(n,n) (1973Fo11), 23 keV *10* from ^{16}O(d,p) (1957Br82), and 33 keV *5* from ^{19}F(d,α) (2015Fa12). J^{π}: From ^{16}O(n,n) (1973Jo01).
6361.5 *71*	1/2+	126 keV *14*	A E KL PQ S U X Z	XREF: Others: AA, AD, AG, AJ, AL, AM, AT, AU, BD %n≈100 T=1/2 XREF: AT(6300). Γ_n: $\Gamma \approx \Gamma_n$ (2012La29). E(level): From 6356 keV *8* from ^{16}O(n,n) (1973Fo11) and 6363.4 keV *31* from ^{19}F(d,α) (2015Fa12). Γ: weighted average of 83 keV *+9−12* from ^{13}C(^{6}Li,d) (2012La29), 124 keV *12* from ^{16}O(n,n) (1973F011) and 136 keV *5* from ^{19}F(d,α) (2015Fa12). J^{π}: From ^{16}O(n,n) (1973Jo01).
6860.6[#] *4*	5/2+[#]	<1 keV	JKL N PQ ZA	XREF: Others: AD, AG, AJ, AM, AU, AV, BB, BD %n≈100; %α>1×10^{-5} $\Gamma\alpha$=0.11×10^{-3} eV (2020Me09) XREF: AV(6.86E3). E(level): Average of 6860.7 keV *4* from ^{19}F(d,α) (2015Fa12) and 6860.3 keV *7* from ^{13}C(α,n) (1993Br17). Γ: From ^{16}O(n,n) (1973Fo11). J^{π}: from ^{12}C(^{6}Li,p),(^{7}Li,d) (2008Cr03).
6972.5 *4*	(7/2−)	<1 keV	JKL N PQ Z	XREF: Others: AA, AD, AG, AJ, AL, AN, AT, AU, BD %n≈100; %α>8×10^{-6} $\Gamma\alpha$=0.082×10^{-3} eV (2020Me09) E(level): From average of 6972.6 keV *4* from ^{19}F(d,α (2015Fa12) and 6972.1 keV *8* from ^{13}C(α,n) (1993Br17). Γ: From ^{16}O(n,n) (1973Fo11). J^{π}: From ^{17}O(e,e′) (1972Ma52).
7165.86 *17*	5/2−	1.38 keV *5*	JKL N PQ X Z	XREF: Others: AD, AG, AJ, AU, BD %n≈100; %α=0.19

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)†	J^π	$T_{1/2}$	XREF	Comments
				$\Gamma\alpha$=2.7 eV $\Gamma\alpha$: From (1973J011). See also Γ_a=3.4 eV (2020Me09) and Γ_n/Γ_α=1300 (1957Wa46). E(level): From ^{16}O(n,n) (1980Ci03). See also 7166.5 keV *15* from ^{13}C(α,n)) (1973Ba10) and 7165.4 keV *18* from ^{19}F(d,α) (2015Fa12). Γ: From ^{16}O(n,n) (1980Ci03). See also 1.5 keV *2* from ^{13}C(α,n) (1973Ba10). J^π: From ^{16}O(n,n) (1973Jo01).
7214 *5*	3/2$^+$	263 keV *7*	N PQ T	XREF: Others: AG, AJ, AT, AU, BD %n=99.957; %α=0.043 XREF: N(7202)P(7248). Γ_α/Γ=0.00043 from Γ_n=280 keV Γ_α=0.12 keV (1973Jo01). See also Γ_n=400 keV and Γ_α=0.09 keV (2008Pe09) and Γ_n=340 keV and Γ_α=0.14 keV (2008He11, 2012La29). and Γ_α=0.073 keV (2020Me09). E(level): From average of 7216 keV *4* from ^{19}F(d,α) (2015Fa12) and 7202 keV *10* from ^{16}O(n,n) (1973Fo11). Γ: weighted average of 280 keV *28* from ^{16}O(n,n) (1973Fo11) and 262 keV *7* from ^{19}F(n,t) (2015Fa12). J^π: From ^{16}O(n,n) (1973Fo11, 1973Jo01).
7379.23 *19*	5/2$^+$	0.61 keV +*14*−*11*	JKL N PQ X Z	XREF: Others: AE, AG, AJ, AL, AN, AT, AU, BB, BD %n≈98; %α≈1.9; %IT=0.13 $\Gamma_{\gamma0}$=0.8 eV *4* (1979Jo05) XREF: K(7380)L(7388)Q(7379)Z(7379)BB(7380)BD(7380.1). Γ_α/Γ≈0.02 from Γ_n=0.50 keV Γ_α=0.01 keV (1973Jo01) See also Γ_n/Γ_α=450 (1957Wa46), Γ_n=0.41 keV Γ_α=0.011 keV (2008He11, 2012La29). E(level): Average of 7379.20 keV *19* from ^{16}O(n,n) (1980Ci03) and 7380.9 keV *15* from ^{13}C(α,n) (1973Ba10). See also 7379 keV *3* from ^{16}O(n,γ),(n,n) (1973Fo11). Γ: weighted average of 0.6 keV +*2*−*1* from ^{13}C(α,n) (1973Ba10) and 0.64 keV *23* from ^{16}O(n,n) (1980Ci03). J^π: From ^{16}O(n,n) (1970Fo03,1957Wa46). and ^{13}C(α,n) (1973Ba10).
7382.37 *14*	5/2$^-$	0.90 keV +*17*−*14*	JKL N PQ Z	XREF: Others: AD, AG, AJ, AU, BB, BD %n=99.73; %α=0.27 XREF: K(7380)L(7388)P(7381)Q(7382)Z(7379)BB(7380)BD(7380.1). Γ_α/Γ≈0.0027 from Γ_n=1.2 keV Γ_α=3.2 eV (1973Jo01). E(level): From 7382.16 keV *14* ^{16}O(n,n) (1980Ci03) and 7383.9 keV *15* from ^{13}C(α,n) (1973Ba10). See also 7382 keV *3* from

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)[†]	J^{π}	$T_{1/2}$	XREF	Comments
				^{16}O(n,γ),(n,n) (1973Fo11). Γ: weighted average of 0.8 keV +3−2 from ^{13}C(α,n) (1973Ba10) and 0.96 keV 20 from ^{16}O(n,n) (1980Ci03). J^{π}: From ^{16}O(n,n) (1970Fo03,1957Wa46). and ^{13}C(α,n) (1973Ba10).
7543 *20*	3/2$^-$	500 keV *50*	A D I L P Z	XREF: Others: AF, AG, AJ, AM, AQ, AU, BD %n=99.984; %α=0.016 Γα=80 eV (1973Jo01); Γ_n≈500 keV XREF: I(7.56E3)P(7559). E(level): Average of 7510 keV *30* from ^{19}F(d,α) (Bu51), 7530 keV *50* from ^{16}O(d,p) (Bu51) 7559 keV *20* from ^{16}O(n,n) (1973Fo11). Γ: From ^{16}O(n,n) (1973Fo11). J^{π}: From ^{16}O(n,n) (1973Fo11).
7573.5[#] *6*	7/2$^+$[#]	<0.1 keV	JK N PQ T	XREF: Others: AD, AG, AN, AU, AV, BD %n<99.93; %α>0.073 Γα≈7.3 eV (2020Me09) XREF: P(7576)T(7600)AV(7.58E3). E(level): Average of 7572.9 keV *21* from ^{13}C(α,n) (1973Ba10, 1993Br17) and 7573.5 keV *6* from ^{15}F(d,α) (2015Fa12). Γ: This level is not observed in ^{16}O(n,n) (1973Fo11) leading to a width estimate of Γ<0.1 keV. J^{π}: From ^{12}C(^{6}Li,p)(^{7}Li,d) (2008Cr03).
7689.21 *22*	7/2$^-$	14.4 keV *3*	J N PQ	XREF: Others: AD, AG, AJ, AN, AT, AU, BD %n=90.27; %α=9.72; %IT=0.01 Γ_n=13.0 keV *6* (1980Ci03); $\Gamma_{\gamma0}$=1.5 eV *5* (1979Jo05) XREF: AJ(7689.21)AT(7660). E(level): From ^{16}O(n,n) (1980Ci03). See also 7689.2 keV *6* from from ^{19}F(d,α) (2015Fa12). Γ: From ^{16}O(n,n)(1980Ci03). See also 12 keV *4* from ^{19}F(d,α) (2015Fa12). J^{π}: From ^{16}O(n,n) (1973Jo01).
7763.6[‡] *4*	11/2$^-$	<4 keV	JK PQ X	XREF: Others: AD, AE, AF, AL, AN, AT, AU, AV, BD, BF T=1/2 XREF: AT(7800). E(level),Γ: From ^{19}F(d,α) (2015Fa12). J^{π}: From ^{12}C(^{7}Li,d) (2008Cr03).
7955 *8*	1/2$^+$	85 keV *9*	N	XREF: Others: AG, AJ, AT, AU %n=92.61; %α=7.39 XREF: AT(7910).

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)†	J^π	$T_{1/2}$	XREF	Comments
				Γ_α/Γ=7.39 From Γ_α=6.7 keV and Γ_n=84 keV (1973Jo01). See also Γ_n/Γ_α=10 (1957Wa46). E(level): Average of 7952 keV *8* from ^{13}C(α,n) (1973Ba10) and 7958 keV *8* from ^{16}O(n,n) (1973Fo11). Γ: weighted average of 79 keV *10* from ^{13}C(α,n) (1967Se07) and 90 keV *9* from ^{16}O(n,n) (1973Fo11). J^π: From ^{16}O(n,n) (1973Fo11, 1973Jo01).
7992 *50*	1/2⁻	270 keV *27*	A O	XREF: Others: AD, AG, AJ %n≈94.7; %α≈5.3 Γ_α/Γ=0.053 From Γ_α=14 keV and Γ_n=250 keV (1973Jo01). See also Γ_α/Γ=0.059 *7* (1973Fo11). E(level),J^π,Γ: From ^{16}O(n,n) (1973Fo11, 1973Jo01).
8070 *10*	3/2⁺	77 keV *8*	NO	XREF: Others: AD, AG, AJ, AV %n≈83; %α≈17 XREF: N(8079). Γ_α/Γ=7.39 From Γ_α=15 keV and Γ_n=71 keV (1973Jo01). E(level): Average of 8060 keV *8* from ^{16}O(n,n) (1973Fo11) and 8079 keV *8* from ^{13}C(α,n) (1973Ba10). Γ: weighted average of 71 keV *8* from ^{13}C(α,n) (1967Se07) and 85 keV *9* from ^{16}O(n,n) (1973Fo11, 1973Jo01). J^π: From ^{16}O(n,n) (1973Jo01).
8181? *20*	1/2⁻	69 keV *7*		XREF: Others: AG, AJ %n=98.8; %α=1.2 Γα=0.8 keV; Γ_n= 68 keV E(level),J^π,Γ,Γα: From (1973Fo11). See global R-matrix analysis in (1973Jo01). This level was included in (1977Aj02) but was later dropped.
8200 *8*	3/2⁻	61 keV *10*	A J NOP X	XREF: Others: AD, AE, AG, AJ, AL, AT, AU, BB %n≈92.305; %α≈7.692; %IT≈0.002 $\Gamma_{\gamma 0}$=1.4 eV *5* (1979Jo05) XREF: N(8199)AD(8192)AJ(8209)AT(8204). Γ_α/Γ=7.69 From Γ_α=4 keV and Γ_n=48 keV (1973Jo01). See also Γ_α/Γ=0.077 *8* (1973Fo11). E(level): From 8199 keV *8* from ^{13}C(α,n) (1973Ba10), 8192 keV *10* from ^{15}N(^{3}He,p) (1972Le01), 8210 keV *25* from ^{12}C(^{6}Li,p) (1986Sm10), 8199 keV *10* from ^{16}O(n,γ),(n,n) (1973Fo11) and 8209 keV *10* from ^{16}O(n,n) (1960Ts02). Γ: From 71 keV 5 from ^{13}C(α,n) (1967Se07), Γ=52 keV in ^{16}O(n,n) (1973Fo11), and Γ_α=4 keV and Γ_n=48 keV (1973Jo01). In (1977Aj02) and later, the value Γ=60 keV was given. J^π: From ^{16}O(n,n) (1973Jo01).
8343.94 *39*	1/2⁺	11.4 keV *5*	NO	XREF: Others: AD, AJ, AU %n=71; %α=29 Γ_n=8.1 keV *3* XREF: N(8350). Γ_n: From (1980Ci03). See also Γ_n=10 keV and

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)†	J^π	$T_{1/2}$	XREF	Comments
				Γ_α=2.2 keV from (1973Jo01), Γ_n/Γ_α=6.7 (1957Wa46) and Γ_α/Γ=0.44 (1965Ba32). E(level),Γ: From ^{16}O(n,n) (1980Ci03). See also E_x=8350 keV *4* and Γ=9 keV *3* in ^{13}C(α,n) (1973Ba10,1967Se07). J^π: From ^{17}O(e,e′) (1987Ma52).
8403.90 *7*	5/2$^+$	6.17 keV *13*	J L NO Q T	XREF: Others: AD, AJ, AN, AU, AV %n=77; %α=23 Γ_n=4.75 keV *11* XREF: L(8400). Γ_n: From (1980Ci03). See also Γ_n=4.8 and Γ_α=0.54 from (1973Jo01), Γ_n=3.84 keV and Γ_α=0.16 keV (1967Se07), Γ_n/Γ_α=19 (1957Wa46) and Γ_α/Γ=0.08 (1965Ba32). E(level): From ^{16}O(n,n) (1980Ci03). See also 8408 keV *3* from ^{13}C(α,n) (1973Ba10). Γ: From ^{16}O(n,n) (1980Ci03). See also 5 keV *2* from ^{13}C(α,n),(α,α) (1965Ba32), and 4 keV *3* from ^{13}C(α,n) (1967Se07). J^π: From ^{16}O(n,n) (1973Jo01).
≈8467	9/2$^+$	<10 keV	JK Q	XREF: Others: AT, AU XREF: AT(8480). E(level),Γ: From ^{17}O(e,e′) (1987Ma52). J^π: See comment on E_x=8467.63 keV J^π=7/2$^+$ state.
8467.63# *9*	7/2$^+$#	2.13 keV *18*	NOP X Z	XREF: Others: AA, AE, AJ %n=55.2; %α=44.5; %IT=0.3 Γ_n=1.18 keV *4* $\Gamma_{\gamma0}$=6.6 eV *18* (1979Jo05) XREF: N(8473). Γ_n: From (1980Ci03). See also Γ_n=small and Γ_α=7.6 keV from (1973Jo01), Γ_n/Γ_α=31 (1957Wa46) and Γ_α/Γ=0.97 (1965Ba32). This is very poor agreement. E(level): From ^{16}O(n,n) (1980Ci03). See also 8473 keV *3* ^{13}C(α,n) (1973Ba10) and other similar values in ^{12}C(^{6}Li,p),(^{7}Li,d). Γ: From ^{16}O(n,n) (1980Ci03). See also 7 keV *3* in ^{13}C(α,n) (1967Se07) and ^{13}C(^{6}Li,d) (1978Ar15). J^π: Private communication D.J. Millener (2021). In (1993Ti03) the J^π of this level was listed as 9/2$^+$ with a footnote reading "private communication with D.J. Millener"; however, this message did not convey the intended communication. Prior evaluations confirmed the presence of a J^π=7/2$^+$ state at this energy based on, for example, ^{13}C(α,n) (1957Wa46, 1965Ba52) and ^{16}O(n,n) (1973Jo01). Millener had suggested the presence of an additional J^π=9/2$^+$ state in this region based on the ^{17}O(e,e′) data of (1987Ma52) and ^{14}C(^{6}Li,t) (1981Cu11, 1983Cu02, 1983Cu04). We accept this interpretation and list a 7/2$^+$ & 9/2$^+$ doublet.

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)†	J^π	$T_{1/2}$	XREF	Comments
8502.40 *12*	5/2−	6.89 keV *22*	NOPQ	XREF: Others: AD, AJ, AU %n=42; %α=58 Γ_n=2.86 keV *4* Γ_n: From (1980Ci03). See also Γ_n=3.4 keV and Γ_α=1.9 keV from (1973Jo01), Γ_n= 4.57 keV and Γ_α=0.43 keV (1967Se07), Γ_n/Γ_α=2.8 (1957Wa46) and Γ_α/Γ=0.26 (1965Ba32). E(level): From ^{16}O(n,n) (1980Ci03). See also 8507 keV *12* from ^{13}C(α,n) (1973Ba10) and 8492 keV *10* ^{15}N(^{3}He,p) (1972Le01). Γ: From ^{16}O(n,n) (1980Ci03). See also 5.0 keV *15* from ^{13}C(α,n),(α,α) (1965Ba32) and 5 keV *3* from ^{13}C(α,n) (1967Se07). J^π: From ^{16}O(n,n) (1973Jo01).
8688.9 *4*	3/2−	55.3 keV *6*	JK NOPQ	XREF: Others: AD, AJ, AT, AU, BB %n=88.4; %α=11.5; %IT=0.002 Γ_n=48.9 keV *11* (1980Ci03) $\Gamma_{\gamma 0}$=1.2 eV *6* (1979Jo05) Γ_n: From (1980Ci03). See also Γ_n=42 keV and Γ_α=1.8 keV from (1973Jo01), Γ_n/Γ_α=17 (1957Wa46) and Γ_α/Γ=0.06 (1965Ba32). E(level): From ^{16}O(n,n) (1980Ci03). See also 8702 keV *12* from ^{12}C(^{6}Li,p) (1986Sm10) and 8698 keV *5* from ^{13}C(α,n) (1973Ba10). Γ: from ^{16}O(n,n) (1980Ci03). See also 50 keV *3* from ^{13}C(α,n) (1967Se07). J^π: From ^{16}O(n,n) (1973Jo01).
8880 *20*	(7/2−,9/2−)	6 keV	OPQ Z	XREF: Others: AD, AJ, AN, AT, AU %α≈99.93; %IT=0.068 $\Gamma_{\gamma 0}$=4.1 eV *8* (1979Jo05) XREF: AJ(8858)AT(8900)AU(8.90E3). Γα: Γ_α/Γ ≈ 1 (1965Ba32). E(level): From 8858 keV *10* ^{16}O(n,n) (1960Ts02) 8880 keV *70* ^{14}N(α,p) (1969Ba17), 8890 keV *40* ^{16}O(α,^{3}He) 8900 keV *20* ^{17}O(e,e′) (1987Ma52) 8900 keV *10* ^{15}N(^{3}He,p) (1972Le01). Γ: From ^{13}C(^{6}Li,d) (1978Ar15). J^π: From (7/2−) in ^{13}C(^{6}Li,d) (1978Ar15) and (9/2−) in ^{17}O(e,e′) (1987Ma52).
8900 *8*	3/2+	101 keV *3*	JK NOPQ T X	XREF: Others: AE, AJ, AK %n<78; %α>22 T=1/2 XREF: K(8900). Γ_n: See Γ_n/Γ_α=3.5 (1957Wa46) and Γ_α/Γ=0.5 (1965Ba32). E(level): From 8905 keV *8* from ^{12}C(^{6}Li,p) (1986Sm10), 8890 keV *30* from ^{15}N(α,d) (1969Lu07) 8896 keV *8* from ^{13}C(α,n)

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)[†]	J^{π}	$T_{1/2}$	XREF	Comments
				(1973Ba10). J^{π},Γ: From ^{13}C(α,n) (1971Ba06,1967Se07).
8968.7 *16*	7/2⁻	24.8 keV *24*	J NOPQ	XREF: Others: AD, AF, AJ, AK, AL, AU %n=89; %α=11 Γ_n/Γ=0.894 from Γ_n=23.5 keV and Γ=26.3 keV (1980Ci03). See also Γ_n=23 keV and Γ_α=2.3 keV from (1973Jo01), Γ_n/Γ_α=35 (1957Wa46) and Γ_α/Γ=0.04 (1965Ba32). E(level): From average of 8970 keV *4* from ^{13}C(α,n) (1973Ba10) and 8968.5 keV *16* from ^{16}O(n,n) (1980Ci03). Γ: weighted average of 21 keV *3* from ^{13}C(α,n) (1967Se07) and 26.3 keV *19* from ^{16}O(n,n) (1980Ci03). J^{π}: From ^{16}O(n,n).
9146 *4*	1/2⁻	4 keV *3*	MNOPQ	XREF: Others: AK, AT, AU, BB %n=55; %α=45; %IT=0.025 $\Gamma_{\gamma 1}$=1.44 eV *26* XREF: P(9150)AU(9.15E3). Γ_α/Γ=0.45 (1968Ke02). $\Gamma_{\gamma 0}$: From $\Gamma_\alpha\Gamma_{\gamma 1}/\Gamma$=0.65 eV *7* (1983Ra29). Using Γ_α/Γ=0.45 gives $\Gamma_{\gamma 1}$=1.44 eV *26*. E(level),Γ: From ^{13}C(α,n) (1973Ba10, 1967Se07). J^{π}: From 13C(α,γ) (1983Ra29). The lower member of the 9.15 MeV doublet appears to be populated mainly via γ, n and α reactions on ^{17}O, ^{16}O and ^{13}C, respectively; whilst the higher member is populated via transfer reactions on ^{13}C and ^{15}N.
9158 *10*	9/2⁻		Q	XREF: Others: AD, AE, AF, AU T=1/2 XREF: AU(9.15E3). E(level): From average of 9160 keV *10* from ^{15}N(^{3}He,p) (1972Le01) and 9137 keV *30* from ^{15}N(α,d) (1969Lu07). J^{π}: From ^{15}N(α,d). See doublet comment on 9146 keV state.
9181 *9*	7/2⁻	3 keV	J NOPQ X Z	XREF: Others: AJ, AT, AU %α≈98 XREF: N(9180)Z(9140)AJ(9178)AT(9280). Γ_α/Γ ≈ 0.98 from ^{13}C(α,α_0) (1968Ke02); the resonance was not observed in the (α,n) channel. E(level): From ^{12}C(^{6}Li,p) (1986Sm10). See also (2008Cr03). J^{π},Γ: From ^{13}C(^{6}Li,d) (1978Ar15).
9196.16 *9*	5/2⁺	3.53 keV *13*	K NO	XREF: Others: AJ, AK, AU %n=67; %α=33 Γ_n=2.37 keV *8* XREF: K(9190)N(9199)AJ(9196.16). Γ_n: From (1980Ci03). See also Γ_n=3.86 keV and Γ_α=0.14 keV from (1967Se07), Γ_α/Γ=0.20 (1968Ke02). E(level),Γ: From ^{16}O(n,n) (1980Ci03). See also Γ=4 keV *3* from ^{13}C(α,n) (1967Se07). J^{π}: From ^{13}C(α,n) (1967Se07).
9423	3/2⁻	120 keV		XREF: Others: AJ, AU

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)[†]	J^π	$T_{1/2}$	XREF	Comments
				%n=100 Γ_n: Γ_n=Γ (1973Jo01). E(level),J^π,Γ: From ^{16}O(n,n) (1973Jo10).
9491 *4*	5/2$^-$	8 keV *3*	JK NO Q	XREF: Others: AD, AK, AN, AU %n=15; %α=85 Γ_α/Γ=0.85 (1968Ke02). E(level): From 9491 keV 4 ^{13}C(α,n) (1973Ba10), 9487 keV *8* ^{12}C(^{6}Li,p) (2008Cr03), and ^{15}N(^{3}He,p) (1972Le01). Γ: From ^{13}C(α,n) (1967Se07). J^π: From ^{15}N(^{3}He,p) (1972Le01).
9714.53 *14*	7/2$^+$	23.1 keV *3*	JK NO Q X Z	XREF: Others: AD, AJ, AK, AU %n=78; %α=22 Γ_n=18.0 keV *6* XREF: Z(9790). Γ_n: From (1980Ci03). See also Γ_α/Γ=0.70 (1968Ke02). This is rather poor agreement. E(level),Γ: From ^{16}O(n,n) (1981Ci03). J^π: From ^{13}C(α,n) (1971Ba06).
9786.07 *15*	3/2$^+$	11.7 keV *3*	NO T	XREF: Others: AE, AJ, AL, AN %n=88; %α=12 Γ_n=10.3 keV *3* XREF: N(9739). Γ_n: From (1980Ci03). See also Γ_α/Γ=0.90 (1968Ke02). E(level),Γ: From ^{16}O(n,n) (1981Ci03). J^π: From ^{13}C(α,n) (1971Ba06).
9861.74 *15*	(5/2$^-$)	4.01 keV *23*	JKL NOP X	XREF: Others: AD, AJ, AK, AU %n=84; %α=16 Γ_n=3.37 keV *20* XREF: J(9866)N(9863)P(9877)X(9.87E3)AD(9856). Γ_n: From (1980Ci03). See also Γ_n=3.86 keV and Γ_α=0.14 keV (1967Se07). E(level),J^π,Γ: From ^{16}O(n,n) (1981Ci03). In (1971Aj02) a single level was indicated at E_x=9.88 MeV with J^π=9/2$^+$. In ^{13}C(α,n) (1973Ba10,1977Aj01) a doublet was identified at this energy. Finally, (1981Ci03) resolved the present two states at E_n=6076 and 6095 keV (E_x=9862 and 9879) with J^π=(5/2$^-$) and (1/2$^-$), respectively.
9879.4 *10*	(1/2$^-$)	16.7 keV *17*	JK N PQ X	XREF: Others: AD, AJ, AU %n=65; %α=35 Γ_n=10.9 keV *12* (1980Ci03) XREF: J(9866)N(9876)P(9877)X(9.87E3)AD(9856). E(level),J^π,Γ: From ^{16}O(n,n) (1981Ci03). See comments on ^{17}O(9861).
9976 *20*	5/2$^+$	≈80 keV	NOPQ	XREF: Others: AK %n=22; %α=78 XREF: AK(9997). Γ_α/Γ=0.78 (1968Ke02). E(level),Γ: From ^{13}C(α,n) (1973Ba10). J^π: From (1971Ba06). See also 7/2$^+$ in ^{13}C(α,n) (1968Ke02) and ^{13}C(^{6}Li,d) (1978Ar15).

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)†	J^π	$T_{1/2}$	XREF	Comments
10045 *20*		≈100 keV	N	XREF: Others: AK %n<100; %α<100 XREF: N(10045)AK(9997). E(level),Γ: From ^{13}C(α,n) (1973Ba10).
10136?	5/2$^+$	138 keV	NOP	%n=15; %α=85 XREF: P(10168). Γ_α/Γ=0.85 (1968Ke02). E(level),Γ: From ^{13}C(α,n) (1968Ke02,1971Ba06) and ^{13}C(^{6}Li,d) (1978Ar15). J^π: From ^{13}C(^{6}Li,d) (1978Ar15). Note: between 1971Aj02 and 1977Aj01 this level was dropped without explanation.
10170.9 *5*	7/2$^-$	49.1 keV *8*	NO	XREF: Others: AJ, AK %n=46; %α=54 Γ_n=22.3 keV *6* Γ_n: From (1980Ci03). See also Γ_α/Γ=0.15 (1968Ke02). E(level),Γ: From ^{16}O(n,n) (1980Ci03) . See also 50 keV *3* from ^{13}C(α,n) (1967Se07). J^π: From ^{13}C(α,n),(α,α) (1968Ke02).
≈10240?	7/2$^+$	122 keV	O	XREF: Others: AD %n=40; %α=60 Γ_α/Γ=0.40 (1968Ke02). E(level),J^π,Γ: From ^{13}C(α,n),(α,α) (1968Ke02).
10335 *15*	(5/2$^+$,7/2$^-$)	150 keV	NO	XREF: Others: AD, AK %n<100; %α<100 E(level),J^π,Γ: From ^{13}C(α,n) (1970Ba10, 1970Ro08).
10421.3 *20*	(5/2$^-$,7/2$^-$)	14 keV *3*	J MNO X	XREF: Others: AT %n<100; %α<100 XREF: AT(10530). E(level): From average of 10422.3 keV *20* ^{13}C(α,n) (1975Be44) and 10419 keV *3* from ^{13}C(α,γ) (1974Be32). Γ: From ^{13}C(α,n) (1963Sp02). J^π: From ^{13}C(α,n) (1970Ro08).
≈10500	(5/2$^+$,7/2$^-$)	75 keV *30*	NO	%n<100; %α<100 Γ: From ^{13}C(α,n),(α,α) (1968Ke02). J^π: From ^{13}C(α,n) (1970Ro08).
10562.3 *8*	(7/2$^-$)	44.5 keV *25*	J NO Q T	XREF: Others: AD, AJ, AK %n=39; %α=61 Γ_{n0}=17.2 keV *7* XREF: N(10558.5)AJ(10562.6). Γ_{n0}: From (1980Ci03). Note: the n_1 decay channel is open. E(level): From 10558.5 keV *2* ^{13}C(α,n) (1975Be44) and 10562.6 keV *6* ^{16}O(n,n) (1980Ci03). Γ: weighted average of 45 keV *20* from ^{13}C(α,n),(α,α), 51 keV *2* from ^{13}C(α,n), and 42.5 keV *11* from ^{16}O(n,n). J^π: From ^{16}O(n,n) (1970Lu16).

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)†	J^{π}	$T_{1/2}$	XREF	Comments
10694 *8*	(7/2^{+})	≤25 keV	JK O Z	XREF: Others: AA, AD %n<100; %α<100 E(level): From ^{12}C(^{6}Li,p) (1986Sm10). Note: between 1971Aj02 and 1977Aj01 this level was dropped without explanation. Since then it has been reported in (1986Sm10, 2008Cr03). Γ: From ^{13}C(α,n),(α,α) (1968Ke02). J^{π}: From ^{14}N(α,p) (1968Ke02).
10777.9 *20*	(1/2^{+},7/2^{-})	74 keV *3*	H NO Q	XREF: Others: AD, AJ, AK %n<100; %α<100 E(level),Γ: From ^{13}C(α,n) (1975Be44). J^{π}: From (1970Ro08).
10914.8 *64*	(5/2^{+})	43.2 keV *16*	J NO	XREF: Others: AD, AJ, AK %n>63; %α<37 Γ_{n0}/Γ=63.3 from Γ_{n0}=26.4 keV 9 and Γ=41.7 keV *14* (1980Ci03). E(level): From average of 10918.9 keV *13* ^{16}O(n,n) (1981Ci03) and 10905 keV *2* from ^{13}C(α,n) (1975Be44). Γ: weighted average of 46 keV *2* from ^{13}C(α,n) (1975Be44), 60 keV *20* from ^{13}C(α,n),(α,α) (1968Ke02), and 41.7 keV *14* from ^{16}O(n,n) (1980Ci03). J^{π}: From ^{16}O(n,n) (1980Ci03).
11035 *2*		31 keV *3*	JKL NO	XREF: Others: AD, AJ, AK, AU %n<100; %α<100 T=1/2 XREF: L(11.0E3)AJ(10957). E(level): From average of 11036 keV *2* ^{13}C(α,n) (1975Be44) and 11032 keV *4* ^{15}N(^{3}He,p) (1972Le01). Γ: From ^{13}C(α,n) (1975Be44).
11082.67 *18*	1/2^{-}	2.4 keV *3*	MN	XREF: Others: AD, AJ, AU, BB, BC %n=85.8; %α=13.8; %IT=0.4 T=3/2 T: From ^{18}O(^{3}He,α) (1969De06). Γ_{n}: Decay branching ratios reported in the literature are Γ_{n0}/Γ=0.79 *7* (1980Ci03, 1981Hi01) and Γ_{n0}/Γ=0.91 *15* and $\Gamma_{n(1+2)}/\Gamma$=0.05 *2* (1973Ad02). In Table 17.11 of (1982Aj01), Fay adopted Γ_{n0}/Γ=0.81 *6* and $\Gamma_{n(1+2)}/\Gamma$=0.05 *2*, this is accepted. $\Gamma_{\alpha0}$: In (1976Mc11), $(\Gamma_{\alpha0}\Gamma_{n0})^{1/2}/\Gamma$=0.23 is reported. Discussion in footnote f of Table 17.11 in (1986Aj04) indicates the above relation is incorrect, but rather $(\Gamma_{\alpha0}\Gamma_{n0})/\Gamma$=0.27 keV ±20% is the correct relationship. We note (1986Aj04) used the former relation, while (1993Ti07) accepted the later. We accept $(\Gamma_{\alpha0}\Gamma_{n0})/\Gamma$=0.27 keV *6*. $\Gamma_{\alpha0}$: Using this and Γ_{n0}/Γ=0.81 *6*, we find $\Gamma_{\alpha0}$=0.33 keV *8*. Taking this and Γ=2.4

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)[†]	J^π	$T_{1/2}$	XREF	Comments
				XREF: Others: AD, AJ, AU, BB, BC %n=85.8; %α=13.8; %IT=0.4 T=3/2 T: From ^{18}O(^{3}He,α) (1969De06). Γ_n: Decay branching ratios reported in the literature are Γ_{n0}/Γ=0.79 *7* (1980Ci03, 1981Hi01) and Γ_{n0}/Γ=0.91 *15* and $\Gamma_{n(1+2)}/\Gamma$=0.05 *2* (1973Ad02). In Table 17.11 of (1982Aj01), Fay adopted Γ_{n0}/Γ=0.81 *6* and $\Gamma_{n(1+2)}/\Gamma$=0.05 *2*, this is accepted. $\Gamma_{\alpha0}$: In (1976Mc11), $(\Gamma_{\alpha0}\Gamma_{n0})^{1/2}/\Gamma$=0.23 is reported. Discussion in footnote f of Table 17.11 in (1986Aj04) indicates the above relation is incorrect, but rather $(\Gamma_{\alpha0}\Gamma_{n0})/\Gamma$=0.27 keV ±20% is the correct relationship. We note (1986Aj04) used the former relation, while (1993Ti07) accepted the later. We accept $(\Gamma_{\alpha0}\Gamma_{n0})/\Gamma$=0.27 keV *6*. $\Gamma_{\alpha0}$: Using this and Γ_{n0}/Γ=0.81 *6*, we find $\Gamma_{\alpha0}$=0.33 keV *8*. Taking this and Γ=2.4 keV *3* gives $\Gamma_{\alpha0}/\Gamma$=0.14 *4*. $\Gamma_{\alpha0}$: The value $\Gamma_{\alpha0}/\Gamma$=0.07 *1* sometimes appears in the literature based on $(\Gamma_{\alpha0}\Gamma_{n0})^{1/2}/\Gamma$=0.23 given in (1976Mc11 and an earlier McDonald BAPS talk) and based on Γ_{n0}/Γ=0.91 *15* from (1972ad03); this was used by (1972Ad03) along with Γ=5.0 keV *11* (1976Mc11,BAPS) to obtain $\Gamma_{\alpha0}$=0.3 keV, but the agreement with the present analysis is purely accidental and by chance. $\Gamma_{\gamma1}$: Subsequently, $(\Gamma_{\alpha0}\Gamma_{\gamma1})/\Gamma$=1.46 eV *26* is given in (1983Ra29). Using $\Gamma_{\alpha0}/\Gamma$=0.14 *4* gives $\Gamma_{\gamma1}$=10.5 eV *35*. Note: a previous value that agrees by chance $\Gamma_{\gamma1}$= 11.6 eV *18* was obtained in (1983Ra29) using $\Gamma_{\alpha0}$=0.3 keV and Γ=2.4 keV *3*. E(level): From ^{16}O(n,n) (1980Ci03,1981Hi01). See also 11076 keV *5* ^{13}C(α,n) (1976Mc11) 11075 keV *4* ^{15}N(^{3}He,p) (1972Le01) and 11082 keV *6* ^{18}O(^{3}He,α) (1969De06). Γ: From ^{16}O(n,n) (1980Ci03,1981Hi01). See also 5.0 keV *11* from ^{13}C(α,n) (1976Mc11, and earlier 1971 BAPS). J^π: From ^{18}O(d,t) (1981Ma14).
11238 *2*	(3/2⁻,7/2⁺)	80.0 keV *25*	K NO X	XREF: Others: AK, AL, AQ %n<100; %α<100 XREF: AQ(11.2E3). E(level),Γ: From ^{13}C(α,n) (1975Be44). J^π: from ^{13}C(α,n) (1970Ro08).
≈11519	≥3/2	≈190 keV		XREF: Others: AJ, AK, BB %n<100; %α<100 XREF: BB(11410). E(level): From ^{16}O(n,n) (1961Fo07, 1959Ha13, 1970Lu16). See also 11410 from ^{18}O(d,t)

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)†	J^π	$T_{1/2}$	XREF	Comments
				(1977Ma10) and 11578 keV from ^{16}O(n,α) (1963Da12). J^π,Γ: From ^{16}O(n,n). See also ≈126 keV from ^{16}O(n,α) (1963Da12).
11622 *2*		65 keV *2*	N	%n<100; %α<100 E(level),Γ: From ^{13}C(α,n) (1975Be44).
11751 *10*		40 keV *25*	N Q	XREF: Others: AK, AU %n<100; %α<100 E(level),Γ: From ^{13}C(α,n) (1963Sp02). See also 11.71 MeV *5* ^{17}O(e,e′) (1977No06).
11815 *13*	7/2$^+$	12 keV *3*	JKL N PQ X	%n<100; %α<100 E(level): From average of 11815 keV *13* ^{12}C(^{6}Li,p),(^{7}Li,d) (2008Cr03) and 11816 keV *15* ^{13}C(α,n) (1963Sp02). J^π: From (2008Cr03). Γ: From ^{13}C(α,n) (1963Sp02).
11880?		≈125 keV		XREF: Others: AK %n<100; %α<100 XREF: AK(11880). E(level),Γ: From ^{16}O(n,α) (1963Da12). Not reported in any other study.
11.95×10^3? *5*	≥3/2	≈250 keV		XREF: Others: AJ, AU %n<100 XREF: AU(11.95E3). E(level),Γ: From ^{17}O(e,e′) (1977No06). J^π: From ^{16}O(n,n) (1961Fo07). See also discussion on E_x=12007 keV.
12007 *10*	9/2$^+$	<50 keV	H JK N X Z	XREF: Others: AA, AK %n<100; %α<100 XREF: Z(12000). E(level),J^π,Γ: From ^{12}C(^{6}Li,p)(^{7}Li,d) (1986Sm10,2008Cr03), and ^{13}C(α,n) (1963Sp02). In previous reviews, a broad state bear 12.0 MeV was listed. In the present evaluation, we find evidence for a broad state near 11.95 MeV and a narrow state at 12007 keV.
12118 *10*		150 keV *50*	N T	XREF: Others: AJ, BB %n<100; %α<100 T=1/2 T: From ^{18}O(d,t) (1977Ma10). E(level): From average of 12109 keV *20* ^{13}C(α,n) (1963Sp02) and 12120 keV *10* ^{18}O(d,t) (1977Ma10). Γ: From ^{13}C(α,n) (1963Sp02).
12229‡ *16*	7/2$^-$	≤20 keV	JK	XREF: Others: AU E(level): From average of 12220 keV *20* ^{17}O(e,e′) (1987Ma52), 12239 keV *16* ^{12}C(^{6}Li,p) (1986Sm10,2008Cr03), 12220 keV *26* ^{12}C(^{7}Li,d) (2008Cr03). J^π: From ^{12}C(^{6}Li,p),(^{7}Li,d) (2008Cr03). Γ: From ^{17}O(e,e′) (1987Ma52).
12274 *15*	(7/2$^+$)	100 keV *30*	N X	XREF: Others: AK, AL %n<100; %α<100

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)[†]	J^{π}	$T_{1/2}$	XREF	Comments
				T=1/2 E(level),Γ: From $^{13}C(\alpha,n)$ (1963Sp02). J^{π}: From $^{14}C(^{6}Li,t)$ (1983Cu02).
12385 *20*		130 keV	N PQ	XREF: Others: AJ %n<100; %α<100 E(level): From $^{13}C(\alpha,n)$ (1963Sp02). Γ: From $^{16}O(n,n)$ (1961Fo07).
12424 *13*	$9/2^{+}$	<50 keV	JK N Z	%n<100; %α<100 XREF: N(12421). E(level): From average of 12428 keV *13* $^{12}C(^{6}Li,p)$ (1986Sm10, 2008Cr03), 12420 keV *26* $^{12}C(^{7}Li,d)$ (2008Cr03) and 12421 keV *15* $^{13}C(\alpha,n)$ (1963Sp02). J^{π},Γ: From $^{12}C(^{6}Li,p),(^{7}Li,d)$ (1986Sm10).
12471.4 *6*	$3/2^{-}$	7.2 keV *11*	N	XREF: Others: AJ, AU, BB, BC %n>18; %α<82 T=3/2 Γ_{n0}=1.27 keV *14* XREF: N(12458). T: From $^{18}O(^{3}He,t)$ (1969De06), $^{18}O(d,t)$ (1981Ma14) $^{16}O(n,n)$ (1976Mc11, 1981Hi01). Γ_{n0}: from (1980Ci03). E(level),Γ: From $^{16}O(n,n)$ (1980Ci03,1981Hi01). See also 12458 keV *5* in $^{13}C(\alpha,n)$ (1976Mc11) and 12471 keV *5* in $^{18}O(^{3}He,\alpha)$ (1969De06). Γ: weighted average of 8 keV *2* from $^{13}C(\alpha,n)$ and 6.9 keV *11* from $^{16}O(n,n)$. J^{π}: From $^{13}C(\alpha,n)$ (1976Mc11).
12596 *15*		75 keV *30*	N	%n<100; %α<100 E(level),Γ: From $^{13}C(\alpha,n)$ (1969Sp02).
12670 *15*	$(3/2^{-},9/2^{+})$	75 keV	N	XREF: Others: AJ, AU %n<100; %α<100 E(level),J^{π},Γ: From $^{13}C(\alpha,n)$ (1969Sp02,1970Ro08). See also 12660 keV *50* $^{17}O(e,e')$ (1977No06). Γ: Beginning in (1971Aj02) the Γ for this level was listed at ≈5 keV attributed to $^{13}C(\alpha,n)$ (1969Sp02). However this was a typo. (1969Sp02) report ≈75 keV. Also see ≈90 keV $^{17}O(e,e')$ and ≈95 keV in $^{16}O(n,n)$.
12760 *26*		<70 keV	JK N Z	XREF: Others: BB %n<100; %α<100 T=1/2 XREF: N(12813). T: From $^{18}O(d,t)$ (1977Ma10). E(level): From $^{12}C(^{6}Li,p),(^{7}Li,d)$ (2008Cr03), where it is best resolved. See also 12760 keV *10* from $^{18}O(d,t)$ (1977Ma10: uncertainties seem underestimated) and 12813 keV *25* from $^{13}C(\alpha,n)$ (1963Sp02: the peak is poorly resolved). Γ: From $^{12}C(^{6}Li,p),(^{7}Li,d)$ (2008Cr03).

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)†	J^{π}	$T_{1/2}$	XREF	Comments
12928 *20*	(1/2+,7/2−)	≥150 keV	N	%n<100; %α<100 XREF: N(12928). E(level),J^{π},Γ: From ^{13}C(α,n) (1963Sp02,1970Ro08).
12946 *6*	1/2+	6 keV *2*	N	XREF: Others: AJ, AU, BB, BC %n>3.5; %α<96.5 T=3/2 Γ_{n0}=0.21 keV *14* XREF: N(12944). T: From ^{13}C(α,n) (1976Mc11), ^{18}O(^{3}He,α) (1969De06), ^{16}O(n,n) (1981Hi01). Γ_{n0}: from (1981Hi01). E(level): From 12964 keV *6* ^{16}O(n,n) (1981Hi01) 12944 keV *6* ^{13}(α,n) (1976Mc11) 12950 keV *8* ^{18}O(^{3}He,α) (1969De06). J^{π}: From ^{18}O(d,t), ^{18}O(^{3}He,α). Γ: From ^{16}O(n,n) (1976Mc11).
13004.2 *6*	5/2−	2.5 keV *10*	N X	XREF: Others: AJ, AU, BC %n>16; %α<84 T=3/2 Γ_{n0}=0.40 keV *6* T: From ^{13}C(α,n) (1976Mc11) and ^{18}O(^{3}He,α) (1969De06). Γ_{n0}: from (1981Hi01). E(level),J^{π},Γ: From ^{16}O(n,n) (1976Mc11,1980Ci03,1981Hi01). Others 12993 keV *6* ^{13}C(α,n) and 12994 *8* ^{18}O(^{3}He,α).
13072 *15*	(3/2−)	16 keV *4*	JK N	%n<100; %α<100 E(level): From weighted average of 13070 keV *26* ^{12}C(^{6}Li,p) (2008Cr03), 13060 keV *26* ^{12}C(^{7}Li,d) (2008Cr03) and 13077 keV *15* ^{13}C(α,n) (1963Sp02). Γ: From ^{13}C(α,n) (1963Sp02). J^{π}: From ^{17}O(γ,n) (1985Ju02).
13485 *15*	(9/2+)	≈120 keV	N	XREF: Others: AA, AL %n<100; %α<100 E(level),Γ: From ^{13}C(α,n) (1963Sp02). J^{π}: From ^{14}N(^{6}Li,^{3}He) (1984Et01).
13580‡ *20*	(11/2−,13/2−)	68 keV *19*	E H JKL PQ T Z	XREF: Others: AU XREF: P(13.58E3)T(13.3E3)AU(13.58E3). E(level),Γ: From ^{17}O(e,e′) (1987Ma52). J^{π}: The J^{π}=11/2−,13/2− interfering doublet at 13.6 MeV is discussed in (1987Ca30). In ^{13}C(^{6}Li,d) (1978Ar15) E_{x}=13580 keV *20*, J^{π}=(13/2−) and a broader ≈200 keV width are preferred. On the other hand in ^{17}O(e,e′) (1987Ma52) the same E_{x} is found with a narrower Γ=68 keV and a preference of (11/2−). With no substantially new results, we maintain the interpretation of (1993Ti07).
13610 *15*		≈200 keV	E N	XREF: Others: AU

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)†	J$^{\pi}$	$T_{1/2}$	XREF	Comments
				%n<100; %α<100 XREF: E(13.6E3)AU(13.56E3). E(level),Γ: From ^{13}C(α,n) (1963Sp02).
13641.9 *24*	5/2^{+}	9 keV *5*	X	XREF: Others: AJ, BB, BC %n>2.7 T=3/2 Γ_{n0}=0.024 keV *9* XREF: AJ(13641.9). T: From ^{16}O(n,n) (1981Hi01), ^{18}O(^{3}He,α) (1969De06), ^{18}O(d,t) (1981Ma14). Γ_{n0}: From (1981Hi01). E(level): From 13641.9 keV *24* (1981Hi01). See also 13640 keV *5* ^{18}O(^{3}He,α) (1969De06). Γ: From ^{16}O(n,n) (1981Hi01). J$^{\pi}$: From ^{14}C(^{6}Li,t) (1981Cu11,1983Cu02,1983Cu04), ^{18}O(d,t) (1981Ma14).
13649?		400 keV		XREF: Others: AJ %n≤100 XREF: AJ(13649). E(level),Γ: From ^{16}O(n,n) (1961Fo07).
14.15×10^{3} *10*	(9/2^{+},11/2^{+})	≈150 keV	P	XREF: Others: AL, AU XREF: AU(14.4E3). E(level),J$^{\pi}$,Γ: from ^{13}C(^{6}Li,d) (1978Ar15). Γ: from Γ=200 keV (1978Ar15) and Γ≈100 keV ^{17}O(e,e′) (1977No06). J$^{\pi}$: (11/2^{+}) is slightly preferred.
14237.7 *15*	7/2^{-}	20.5 keV *16*		XREF: Others: AJ, AU, BC %n>10 T=3/2 Γ_{n0}=2.07 keV *16* T: From ^{16}O(n,n) (1981Hi01), ^{18}O(^{3}He,α) (1969De06). Γ_{n0}: From (1981Hi01). E(level),Γ: From ^{16}O(n,n) (1981Hi01). See also 14219 keV *8* in ^{18}O(^{3}He,α) (1969De06). J$^{\pi}$: From ^{17}O(e,e′). See also (7/2^{-}) in ^{16}O(n,n).
14293 *3*		7.5 keV *4*		XREF: Others: AJ, BC %n≤100 T=3/2 E(level),Γ: From ^{16}O(n,n) (1981Hi01). See also 14282 keV *12* ^{18}O(^{3}He,α) (1969De06). T: From ^{16}O(n,n) (1981Hi01) and ^{18}O(^{3}He,α) (1969De06). In (1990Mc06), T=1/2 is assigned based on ^{17}O(γ(14380 keV),n_0), but those results appear uncertain because of persistent energy calibration issues.

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)†	J^π	$T_{1/2}$	XREF	Comments
14458 *3*		40 keV *6*		XREF: Others: AJ, AU %n≤100 E(level),Γ: From ^{16}O(n,n) (1981Hi01).
14550‡ *26*			K	E(level): From ^{12}C(^{7}Li,d) (2008Cr03). Γ: Relatively narrow.
14720‡ *20*	9/2−	35 keV *11*	K	XREF: Others: AQ, AU T=3/2 T: From ^{17}O(e,e′) (1983Ra27). E(level),Jπ,Γ: From ^{17}O(e,e′) (1987Ma52). See also 14720 keV *26* ^{12}C(^{7}Li,d) (2008Cr03).
14.76×10³ *10*	7/2−	≈340 keV	PQ T X	XREF: Others: AJ, AL, AU %n≤100 XREF: P(14760)T(14600)AJ(14590)AU(14.76E3). E(level): From ^{17}O(e,e′) (1977No06). Γ: From ^{16}O(n,n) (1961Fo07). Jπ: From ^{14}C(^{6}Li,t), see (1981Cu11,1983Cu02,1983Cu04).
14799 *3*	1/2−	36 keV *13*		XREF: Others: AJ %n<100 T=3/2 E(level),Jπ,Γ,T: From ^{16}O(n,n) (1981Hi01).
14880 *26*	(15/2+)		H JK Q	XREF: Others: AA %α<100 XREF: K(14880). E(level): From ^{12}C(^{6}Li,p)(^{7}Li,d) (2008Cr03). Jπ: From ^{14}N(^{6}Li,^{3}He) (1984Et01). Γ: Narrow, see (2008Cr03).
14967	(5/2+)	≈155 keV		XREF: Others: AC, AJ %n<100; %α<100 E(level),Γ: From 14967 keV and Γ≈180 keV ^{16}O(n,n) (1961Fo07) and 14981 keV and Γ≈100 keV ^{15}N(d,α) (1966Ti03).
15.10×10³ *10*	(9/2+,11/2+)	0.40 MeV *15*	P	XREF: Others: AC, AT %p<100; %α<100; %IT>0 XREF: AC(15149)AT(15.06E3). E(level),Jπ,Γ: From (1978Ar15). 11/2+ is preferred in (1978Ar15). See also (5/2−,7/2−) in (1966Ti03) ^{15}N(d,α).
15101‡ *8*			K	XREF: Others: AU, BC T=3/2 XREF: AU(15.10E3). T: From ^{18}O(^{3}He,α) (1969De06). E(level): From 15070 keV *26* ^{12}C(^{7}Li,d) (2008Cr03) and 15101 keV *8* ^{18}O(^{3}He,α) (1969De06). Γ: narrow; see ^{17}O(e,e′) (1983Ra27).
15208 *3*	3/2+	52 keV *14*	X	XREF: Others: AB, AJ, AU

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)†	J$^{\pi}$	T$_{1/2}$	XREF	Comments
				%n<100; %p<100 T=3/2 XREF: AU(15.24E3). T: From ^{16}O(n,n) (1981Hi01). In (1990Mc06), T=1/2 is assigned, but those results appear uncertain because of persistent energy calibration issues. E(level),Γ: From (1981Hi01). J$^{\pi}$: From ^{17}O(e,e′) (1983Ra27), ^{14}C(^{6}Li,t) (1981Cu11,1983Cu02,1983Cu04) and ^{16}O(n,n′) (1981Hi01). See also (5/2^{-},7/2^{-}) for a broad level at 15.15 MeV reported in ^{15}N(d,α) (1966Ti03).
15377 *3*	(5/2^{+})	40 keV *6*		XREF: Others: AJ %n≤100 T=3/2 E(level),Γ,J$^{\pi}$,T: From ^{16}O(n,n) (1981Hi01). J: from comparison with ^{17}N analog states.
15620 *26*			JK	XREF: Others: AB, AC %p<100; %α<100 E(level): From (2008Cr03) ^{12}C(^{6}Li,p)(^{7}Li,d).
15787 *20*	(13/2^{-})	<30 keV	K	XREF: Others: AB, AL, AU, AV %p≤100 T=(1/2) XREF: AB(15722). E(level): From average of 15780 keV *20* ^{16}O(e,e′) (1986Ma48) and 15800 keV *26* ^{12}C(^{7}Li,d) (2008Cr03). Γ: From (1986Ma48). J$^{\pi}$,T: From (1987Mi25): See comments, replies and discussion in (1987Mi25) and (1986Ma48, 1987Ma40). The state was initially identified in ^{17}O(e,e′) (1986Ma48) as (9/2^{-}; T=3/2).
15.95×10^{3} *15*	(9/2^{+},11/2^{+})	0.40 MeV *15*	E P	XREF: Others: AB, AC %n<100; %p<100; %α<100; %IT>0 XREF: E(16.1E3)AB(16164)AC(15800). E(level),J$^{\pi}$,Γ: From (1978Ar15). 9/2^{+} is preferred. See also ≈15.8 MeV and Γ≈300 keV (1976Ca28). (1990Mc06) suggest a broad T=1/2 state in ^{17}O(γ,n) around E$_{x}$=15.6 MeV. It may be this state?
16253 *4*	(9/2^{+})	21 keV *10*	E X	XREF: Others: AJ, AU %n<100 T=3/2 XREF: AU(16500). T: From ^{16}O(n,n) (1981Hi01). E(level),Γ: From (1981Hi01) ^{16}O(n,n),(n,n). See also 16.50 MeV *2* and ≤ 20 keV from ^{17}O(e,e′) (1986Ma48). J$^{\pi}$: From (1981Cu11,1983Cu02,1983Cu04) ^{14}C(^{6}Li,t).

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)†	J$^{\pi}$	$T_{1/2}$	XREF	Comments
16578‡ *12*	3/2$^-$	≈300 keV	U	XREF: Others: AU, BB T=3/2 XREF: U(16.52E3)AU(16.52E3). T: From ^{18}O(d,t) (1977Ma10, 1981Ma14). E(level): From 16.52 MeV *5* ^{17}O(e,e′) (1977No06) and 16580 keV *10* (1977Ma10). J$^{\pi}$: From ^{18}O(d,t) (1981Ma14). Γ: From ^{17}O(e,e′) (1977No06).
16.60×10^3‡ *15*	(11/2$^-$,13/2$^-$)		P	E(level),J$^{\pi}$: From ^{13}C(^{6}Li,d) (1978Ar17). 11/2$^-$ is preferred.
17060‡ *20*	(11/2$^-$)	<20 keV	P	XREF: Others: AL, AU, AV T=(1/2) E(level),Γ: From ^{17}O(e,e′) (1986Ma48). J$^{\pi}$,T: From (1987Mi25): See comments, replies and discussion in (1987Mi25) and (1986Ma48, 1987Ma40). The state was initially identified in ^{17}O(e,e′) (1986Ma48) as (7/2$^-$; T=3/2). Also see (7/2$^-$) in ^{16}O(p,π+) (1988Hu02)and ((11/2$^-$ preferred),13/2$^-$) in ^{13}C(^{6}Li,d) (1978Ar15).
17448 *11*		66 keV *20*		XREF: Others: AJ %n<100 T=3/2 E(level),Γ,T: From ^{16}O(n,n) (1981Hi01).
17920 *20*		98 keV *16*		XREF: Others: AU E(level),Γ: From ^{17}O(e,e′) (1986Ma48).
18122 *4*	3/2$^-$	46 keV *12*	Q X	XREF: Others: AJ, AT, BB %n≤100 T=3/2 XREF: Q(18170)AT(18.09E3). E(level),Γ: From 18122 keV *4* ^{16}O(n,n) (1981Hi01). See also 18140 keV *10* ^{18}O(d,t) (1977Ma10) and 18.09 MeV *7* ^{17}O(γ,p) (1992Zu01). J$^{\pi}$: From ^{18}O(d,t) (1981Ma14). T: From ^{18}O(d,t) (1977Ma10, 1981Ma14), ^{16}O(n,n) (1981Hi01).
18720‡ *20*		87 keV *33*		XREF: Others: AU E(level),Γ: From ^{17}O(e,e′) (1986Ma48). Also see 18.5 MeV (1990Mc06) from reanalysis of 19.0 MeV in ^{17}O(γ,n) (1979Jo05).
18830‡ *20*		≤20 keV	T	XREF: Others: AU E(level),Γ: From ^{17}O(e,e′) (1986Ma48), Also see 18.90 MeV *14* ^{13}C(^{13}C,^{9}Be) (1979Br04).
19.28×10^3? *7*		>0.75 MeV	Y	XREF: Others: AT %IT>0

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)†	J^π	$T_{1/2}$	XREF	Comments
				E(level),Γ: From ^{17}O(γ,p) (1992Zu01).
19.60×10^{3}‡ *15*	(13/2$^+$,15/2$^+$)	250 keV	H PQ	XREF: H(19.0E3)Q(19240). E(level),J^π,Γ: From ^{13}C(^{6}Li,d) (1978Ar15). 15/2$^+$ is preferred.
19820 *40*	3/2$^-$	550 keV *50*	Y	XREF: Others: AU %IT>6×10^{-4} $\Gamma_{\gamma0}$≥1 eV; $\Gamma_{\gamma1}$≥2.3 eV XREF: Y(19.76E3). Γ_γ: From (1980Li05). E(level),Γ: From 19760 keV *60* ^{14}N(t,γ) (1980Li05) and 19850 keV *40* ^{17}O(e,e′) (1986Ma48). Γ from 0.55 MeV *5* from (1980Li05) and 0.53 MeV *15* from (1986Ma48). J^π: From (1980Li05).
20140‡ *20*	(11/2$^-$)	31 keV *5*		XREF: Others: AU T=3/2 E(level),Γ: From ^{17}O(e,e′) (1986Ma48). J^π,T: From (1987Mi25): See comments, replies and discussion in (1987Mi25) and (1986Ma48, 1987Ma40). The state was initially identified in ^{17}O(e,e′) (1986Ma48) as (13/2$^-$; T=1/2).
20.20×10^{3}‡ *15*	(13/2$^+$,15/2$^+$)	≈250 keV	P	E(level),J^π,Γ: From ^{13}C(^{6}Li,d) (1978Ar15). 15/2$^+$ is preferred.
20390 *50*	(5/2$^-$,7/2$^-$)	660 keV *70*	Y	XREF: Others: AT %IT>6.5×10^{-4} %IT>0 $\Gamma_{\gamma1}$≥4.3 eV $\Gamma_{\gamma1}$: From (1980Li05). E(level),Γ: From ^{14}N(t,γ) (1980Li05), see also 20.33 MeV *7* (1992Zu01). J^π: 5/2$^-$ from (1980Li05); E1 to ^{17}O(0:5/2$^+$). See also (7/2$^-$) in ^{17}O(γ,p) (1992Zu01).
20580 *50*	1/2$^+$	570 keV *80*	V Y	XREF: Others: AJ, AU %IT≥9×10^{-4}; %n≤99.999 T=(1/2) $\Gamma_{\gamma1}$>5.1 eV XREF: AJ(20425)AU(20.5E3). T: From ^{16}O(n,n) (1970Bo30). $\Gamma_{\gamma1}$: From (1980Li05). Γ_n: Γ_n≈Γ ^{16}O(n,n) (1970Bo30). E(level),J^π,Γ: from ^{14}N(t,γ) (1980Li05). M1 to ^{17}O(871:1/2$^+$).
20700‡ *20*	(9/2$^-$)	<20 keV		XREF: Others: AU T=(3/2) E(level),Γ: From ^{17}O(e,e′) (1986Ma48). J^π,T: From (1987Mi25): See comments,

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Adopted Levels, Gammas (continued)

^{17}O Levels (continued)

E(level)†	J$^{\pi}$	$T_{1/2}$	XREF	Comments
				replies and discussion in (1987Mi25) and (1986Ma48, 1987Ma40). The state was initially identified in ^{17}O(e,e′) (1986Ma48) as (11/2$^-$; T=3/2).
21050 *50*	(3/2$^-$)	470 keV *60*	V Y	%IT>0 %IT>0.0026 $\Gamma_{\gamma 0}\geq$5.8 eV; $\Gamma_{\gamma 1}\geq$6.5 eV E(level),J$^{\pi}$,Γ: From ^{14}N(t,γ) (1980Li05). E1 to ^{17}O(0:5/2$^+$, 871:1/2$^+$); see also 7/2$^-$ from ^{17}O(γ,n/p). Γ_{γ}: From (1980Li05).
21200‡	(13/2$^+$,15/2$^+$)		P	XREF: P(21.2E3). E(level),J$^{\pi}$: From ^{13}C(^{6}Li,d) (1978Ar15). 13/2$^+$ is preferred.
21725 *82*	5/2$^+$	750 keV	V	%IT>0; %α<100 E(level): From ^{14}C(^{3}He,γ) (1976Ch04).
22136 *82*	7/2$^-$	750 keV	P V	XREF: Others: AT, AU %IT>0; %n<100; %α<100; %p<100 XREF: P(22.1E3)AT(22.17E3)AU(22.0E3). E(level): From ^{14}C(^{3}He,γ) (1976Ch04), see also 22.17 MeV *10* ^{17}O(γ,p) (1992Zu01).
22.55×10^3 *17*	3/2$^{(-)}$	≈1 MeV	V	XREF: Others: AU %IT>0 XREF: AU(22.0E3). E(level): From ^{14}C(^{3}He,γ) (1976Ch04).
22960 *82*	1/2$^+$	≈0.4 MeV	V	XREF: Others: AT %IT>0; %p<100 XREF: AT(23.1E3). E(level): From ^{14}C(^{3}He,γ) (1976Ch04), see also 23.1 MeV *1* ^{17}O(γ,p) (1992Zu01).
23454 *82*			V	%IT>0 E(level): From ^{14}C(^{3}He,γ) (1976Ch04).
24442 *82*			V	XREF: Others: AT %IT>0; %p<100 XREF: AT(24.4E3). E(level): From ^{14}C(^{3}He,γ) (1976Ch04), see also 24.4 MeV *1* ^{17}O(γ,p) (1992Zu01).
26500? *15*				XREF: Others: AT %IT>0; %p<100 XREF: AT(26.5E3). E(level): From ^{17}O(γ,p) (1992Zu01).

† *Decay probabilities* are listed as "%n≤100, %α≤100" for levels populated in either ^{16}O(n,α) or ^{13}C(α,n) and when no further information is available. Similarly, "%n≤100" or "%α≤100" is given for population in, for example, ^{16}O(n,n) or ^{15}N(d,α), respectively. Levels populated in ^{17}O(γ,X) are listed with %IT>0 or with $\Gamma_{\gamma 0}$ and %IT from the reported values, but the decay transitions are not given. It appears that in past evaluations several levels were associated with α decay based on their population via ^{18}O(^{3}He,α), and with γ decay based on their population in ^{17}O(e,e′).

‡ Decay mode not specified.

States at E_x:J=5869.62:3/2$^+$, 6860.6:5/2$^+$, 7573.5:7/2$^+$, and 8467.63:9/2$^+$ are well reproduced by simple Bansal-French type weak-coupling calculations and are considered 5p4h in nature (priv. comm. J. Millener (2021)).

Adopted Levels, Gammas (continued)

$\gamma(^{17}O)$

E_i(level)	J^π_i	E_γ †	I_γ	E_f	J^π_f	Mult.	Comments
870.756	1/2+	870.732 *20*	100	0	5/2+	E2	B(E2)(W.u.)=2.424 *37* E_γ: Precisely reported γ-ray energies are 870.76 *4* from $^{16}O(n,\gamma)$:E=thermal (2016Fi04) and 870.725 *20* from $^{16}O(d,p\gamma)$ from (1980Wa24).
3055.40	1/2−	2184.49 *5*	100	870.756	1/2+	E1	B(E1)(W.u.)=8.9×10^{-4} *+22−16* E_γ=2184.49 *5* is reported in $^{16}O(n,\gamma)$:E=thermal (2016Fi04) See also 2184.3 *+3−2* keV (2020Zi03).
3842.8	5/2−	3842.3 *4*	100	0	5/2+		B(E1)(W.u.)=3.6×10^{-3} *2*
(4143.27)	1/2+	1087.89 *4*	100.00 *62*	3055.40	1/2−	E1	
		3272.02 *8*	20.15 *50*	870.756	1/2+	M1	
		4142.6 *6*	4.18 *30*	0	5/2+	E2	
4551.8	3/2−	3680.6 *7*	100	870.756	1/2+	E1	B(E1)(W.u.)=8.3×10^{-2} *2*
		4551.1 *7*	100	0	5/2+	E1	B(E1)(W.u.)=4.2×10^{-2} *8*
9146	1/2−	8273. *4*	100	870.756	1/2+	E1	B(E1)(W.u.)=5.7×10^{-3} *10*
11082.67	1/2−	10208.0 *2*	100	870.756	1/2+	E1	B(E1)(W.u.)=2.5×10^{-2} *4*
$19.28\times10^{3?}$		18418		870.756	1/2+		
		19288		0	5/2+		
19820	3/2−	18949		870.756	1/2+	E1	
		19820		0	5/2+	E1	
20390	(5/2−,7/2−)	20390		0	5/2+	E1	
20580	1/2+	19709		870.756	1/2+	M1	
21050	(3/2−)	20179		870.756	1/2+	E1	
		21050		0	5/2+	E1	
21725	5/2+	20855‡		870.756	1/2+	E2	
		21725		0	5/2+	M1+E2	
22136	7/2−	22136		0	5/2+	E1	
22.55×10^{3}	3/2(−)	21679		870.756	1/2+	E1	
		22550		0	5/2+	E1	
22960	1/2+	22960		0	5/2+	E2	

† From energy level difference, except where noted.

‡ Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level