Adopted Levels, Gammas

Type	History Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Narijauskas, J. H. Kelley, C. G. Sheu	ENSDF	9-June-2017

Q(β^-)=1.574×10^4 *24*; S(n)=2.98×10^3 *25*; S(p)=2.956×10^4 *57*; Q(α)=−2.237×10^4 *28* 2017Wa10
The mass excess adopted by (2017Wa10) is 37.50 MeV *23*. See also 1987Gi05, 1988Wo09, 1991Or01, 2012Ga45.

Enhancement of neutron density profile:

The ^{20}C nucleus has been suggested to be a relatively well-bound non-halo nucleus based on measurements of various interaction cross sections and momentum distributions of breakup products. See discussions in:

2016To10: E(^{20}C)=280 MeV/nucleon, Carbon target, $\sigma_{interaction}$=1.111 b *8*(stat) *9*(syst); R^{matter}_{rms}=2.97 fm *+3−5*.

2012Ko38 E(^{20}C)=241 MeV/nucleon, Carbon target, $\sigma(C)_{1n}$=58 mb *5* and FWHM(parallel momentum dist)= 77 MeV/c, $\sigma(C)_{2n}$=155 mb *25* and FWHM(parallel momentum dist) =211 MeV/c.

2010Ta04, 2011Ya13: E(^{20}C) =40 MeV/nucleon, Liquid H_2 target, $\sigma_{reaction}$=0.791 b *34*, $\sigma(H_2)_{1n}$=22 mb *8*, $\sigma(H_2)_{2n}$=107 mb *15*, and $\sigma_{charge\ changing}$=525 mb *25*.

2001Oz03: E(^{20}C)=905 MeV/nucleon, Be target, $\sigma_{interaction}$=1.187 b *20*, R^{matter}_{rms}=2.98 fm *5*.

For theoretical reviews mainly on the nuclear radii of ^{20}C and other carbon nuclides see: 1997Am05, 1997Do14, 2000De24, 2000Ma28, 2008Ya04, 2009Ch45, 2010Ma38, 2011Fo18, 2011Ib02, 2013Ac02, 2013Lu02, 2014Sa13, 2015Ma68 2017Sh18.

For broader theoretical reviews on nuclear radii including ^{20}C see:
1971St40, 1996Sh13, 1997Ki22, 1999Kn04, 2002Sa29, 2003Bh06, 2004Ne16, 2005Ga31, 2006Sa29, 2008Ca29, 2008Sc02, 2008Sc19, 2010Ca15, 2011Al11, 2013Ha33, 2013Sh05, 2014Fr11, 2015Ha11, 2015Ka02.

Theoretical reviews mainly of ^{20}C: 2004Ar12, 2006Ma48, 2010Ma24, 2012PeZY, 2014Ha15, 2015Ha11.

General theoretical reviews of carbon isotopes: 1993Sa16, 1996Ka14, 1996Re19, 1997Ka25, 1998Sh16, 1999Ha61, 2000Be58, 2003Sa50, 2003Th06, 2004Sa58, 2004Th11, 2005Ka03, 2005Sa63, 2006Le33, 2008Zh16, 2009Um05, 2010Co05, 2011Ya11, 2012Ch48, 2012Id04, 2012Yu04, 2013Ac02, 2013Fo11, 2013Ka33, 2014Ja14, 2014Ma97, 2015Ka02, 2015Zh19, 2016Fo24, 2016La17, 2017Me03.

General theoretical reviews including many nuclides: 1971Fi11, 1978Na07, 1987Bl18, 1987Sa15, 1993Po11, 1995Ho13, 1996Gr21, 1996Su24, 1997Ba54, 1997Ho04, 2001Ka66, 2002Ka73, 2002Me12, 2002Sa12, 2003Jh01, 2004La24, 2004Ne16, 2005Ka02, 2002Ka54, 2006Ko02, 2009Pa46, 2009Yu07, 2011Co18, 2011Eb02, 2011Re05, 2012Yu07, 2014Eb02, 2015Sh21, 2016Pr01.

^{20}C Levels

Cross Reference (XREF) Flags

A	^{1}H(^{20}C,^{20}C′γ)	F	^{181}Ta(^{40}Ar,^{20}C)
B	^{9}Be(^{22}O,^{20}Cγ)	G	^{181}Ta(^{48}Ca,^{20}C)
C	^{9}Be(^{40}Ar,^{20}C)	H	Th(P,^{20}C)
D	^{9}Be(^{48}Ca,^{20}C)	I	U(P,^{20}C)
E	C(^{36}S,Xγ)		

E(level)	J$^\pi$	$T_{1/2}$	XREF	Comments
0	0$^+$	16.3 ms *+40−35*	ABCDEFGH	%β^-=100; %β^-n=65 *18*; %β^-2n<18.6 (2003Yo02) $T_{1/2}$: from weighted average of: 16 ms *+14−4* (1989Le16), 14 ms *+6−5* (1990Mu06),16.7 ms *35* (1995ReZZ, 2008ReZZ), 22 ms *+15−7* (2003Yo02), see also 16.2 ms *35* in the review of (2015Bi05).
1618 *11*	2$^+$	6.8 ps *20*	AB E	E(level): from the E_γ measurements of 2011Pe21 using Doppler corrected germanium spectra. $T_{1/2}$: from 2011Pe21. The mean lifetime τ=9.8 ps *28*(stat) *+5−11*(syst) is deduced corresponding to $T_{1/2}$=6.8 ps *19*(stat) *+5−11*(syst).

Adopted Levels, Gammas (continued)

γ(^{20}C)

E_i(level)	J_i^π	E_γ	E_f	J_f^π	Mult.	Comments
1618	2^+	1618 *11*	0	0^+	E2	B(E2)↓=0.00075 *+32−20* B(E2)↓: from B(E2)=7.5 *+30−17*(stat) *+10−4*(syst) e^2fm^4 (2011Pe21). See also (2016Pr01, 2017Pr04).

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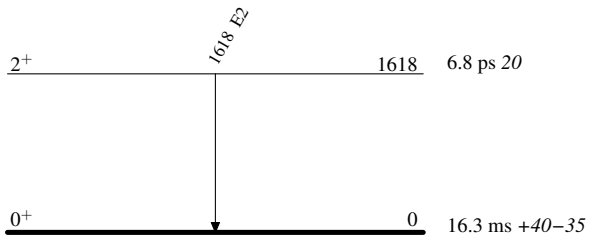
Level Scheme



$^{20}_{6}C_{14}$