Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. G. Sheu, J. H. Kelley	ENSDF	31-Dec-2018

Q(β^-)=17970 *80*; S(n)=2160 *80*; S(p)=1.794×10^4 *13*; Q(α)=−17770 *80* 2017Wa10

The nucleus ^{20}N is particle stable. Its atomic mass excess is 21.770 MeV *80* (2017Wa10).

A review of the production of nuclei far from stability is presented in (1989VoZM). Bulk properties of ^{20}N have been calculated or analyzed with general theoretical models in (1988PoZS, 1992Wa22, 1993Pa14, 1993Po11, 1997Ba54, 2000Zh42, 2002Ka73, 2004La24, 2004Ne16, 2006Ko02, 2012Yu07, 2015Sh21, 2016Ma06, 2016Zh05, 2018Fo04).

^{20}N Levels

Cross Reference (XREF) Flags

A	^{1}H(^{21}N,^{20}N)	H	^{20}C β^- decay	O	^{208}Pb(^{20}N,^{20}Nγ):coulex
B	^{9}Be(^{36}S,^{20}N),^{12}C(x,^{20}Nγ)	I	^{21}N(p,pn)	P	^{208}Pb(^{21}N,^{20}Nγ)
C	^{9}Be(^{40}Ar,^{20}N)	J	Ni(^{40}Ar,^{20}N)	Q	^{232}Th(P,^{20}N)
D	^{9}Be(^{48}Ca,^{20}N)	K	^{48}Ca(^{18}O,^{20}N)	R	^{232}Th(^{18}O,^{20}N)
E	C(^{20}N,X)	L	^{181}Ta(^{40}Ar,^{20}N)	S	^{232}Th(^{22}Ne,^{20}N)
F	C(^{21}N,^{20}N)	M	^{181}Ta(^{48}Ca,^{20}N)	T	U(P,^{20}N)
G	Si(^{20}N,X)	N	^{181}Ta(^{86}Kr,^{20}N)		

E(level)	J$^\pi$†	T$_{1/2}$	XREF	Comments
0	(2$^-$)	134.4 ms *37*	ABCDEFGH JKLMNOPQRST	%β^-=100; %β^-n=42.9 *14* %β^-n: From (2006Su12). J$^\pi$: From (2008So09). See also (2012Yu07). T$_{1/2}$: Weighted average of 136 ms *3* (2006Su12), 129 ms *8* (P.L. Reeder et al., Int. Conf. on Nucl. Data for Science and Technology, May 9-13, 1994, Gatlinburg, Tennessee), 70 ms *40* (1988DuZT), 100 ms *+30−20* (1988Mu08,1990Mu06); see also (1989MuZT,1990St08). Others: 142 ms *19* (1991Re02) and 130.0 ms *66* (unpublished private communications of (2008ReZZ)/(1995ReZZ)). The delayed neutron probability, P$_n$, has been reported as 57% *+11−7* (1988Mu08,1990Mu06), 66.1% *50* (1991Re02), 46% *11* (2006Su12). A reanalysis of (1991Re02) to include data published in the International conference on nuclear data for science and technology: nuclear data for the twenty-first century, Gatlinburg, TN, U.S.A.,9-13 May 1994) estimated P$_n$=52.0% *33*. The measurements of (2006Su12) provide the only quantitative measure of ^{20}O and ^{19}O spectroscopy for levels and transitions involved in the decay. The %β^-1n=42.9 *14* is deduced; furthermore, only ^{19}O*(96,1472) levels are fed in the 1n decay. Beta-decay to neutron bound levels in ^{20}O is found to comprise 53.8% *13* of decays with an additional upper limit of 3.3% feeding ^{20}O$_{g.s.}$ directly. The P$_n$=P$_{1n}$+2P$_{2n}$=52.0% *33* value from the revised zero-threshold measurement of (1991Re02) can be combined with P$_{1n}$=42.9% *14* from (2006Su12) to estimate the value of P$_{2n}$≈4.5%. The P$_{2n}$ contribution in the decay was not considered when the limit on direct feeding of ^{20}Og.s. was deduced. See also (1987BaZI,1987DuZU,1988BaYZ,1993ReZX,1994KiZU).
843 *4*	(3$^-$)		AB	%IT=100
944 *24*			AB	%IT=100
1336 *23*	(1$^-$,2$^-$)		B	%IT=100

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{20}N Levels (continued)

E(level)	J^{π}[†]	XREF	Comments
1559 *30*		AB	%IT=100
1895 *34*	(3^-)	B	%IT>0
2943 *32*	(4^-)	B	%IT>0
3500?		0	%IT>0; %n≈100
4600?		0	%IT>0; %n≈100
5500		0	%IT>0; %n≈100
7000		0	%IT>0; %n≈100
9000		0	%IT>0; %n≈100
10200		0	%IT>0; %n≈100
11500		0	%IT>0; %n≈100

[†] From comparison with shell-model calculations.

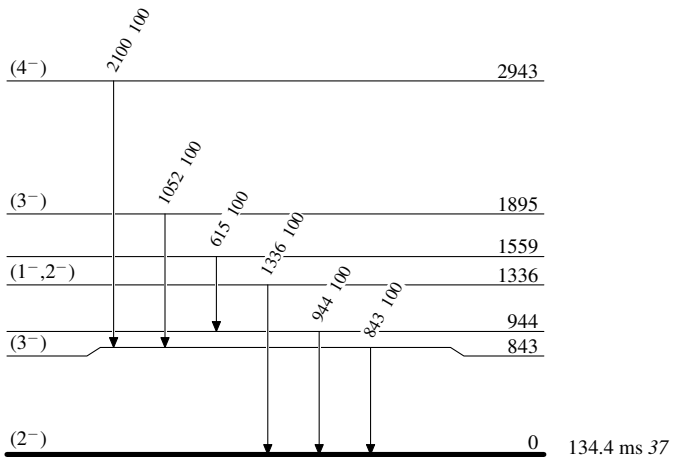
$\gamma(^{20}N)$

E_i(level)	J_i^{π}	E_{γ}	I_{γ}	E_f	J_f^{π}
843	(3^-)	843 *4*	100 *14*	0	(2^-)
944		944 *24*	100	0	(2^-)
1336	(1^-,2^-)	1336 *23*	100	0	(2^-)
1559		615 *18*	100	944	
1895	(3^-)	1052 *29*	100	843	(3^-)
2943	(4^-)	2100 *26*	100	843	(3^-)

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{20}_{7}N_{13}$