^{11}B(^{3}He,d) 1961Hi08,1971Re03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, J. E. Purcell and C. G. Sheu	NP A968,71 (2017)	1-Jan-2017

1961Hi08: ^{11}B(^{3}He,d) E=9.84 MeV.
1967Cr04: ^{11}B(^{3}He,d) E=10 MeV, measured $\sigma(E_d,\theta)$. ^{12}C deduced DWBA fits.
1968Bo26: ^{11}B(^{3}He,d) E=11 MeV, measured $\sigma(E_d,\theta)$. ^{12}C levels deduced S.
1969Mi15: ^{11}B(^{3}He,d) E=10,12,18 MeV, measured $\sigma(E_d,\theta)$. ^{12}C levels deduced S.
1971Re03: ^{11}B(^{3}He,d) E=44 MeV, measured $\sigma(E_d,\theta)$. ^{12}C deduced levels, J, π, level-width.
1988Ig03: ^{11}B(^{3}He,d) E=18.3,22.3 MeV, measured $\sigma(\theta)$, d$\gamma(\theta)$. Deduced model parameters. ^{12}C level deduced substate population.
1993Ar14: ^{11}B(^{3}He,d) E=32.5 MeV, measured $\sigma(\theta)$. Deduced model parameters, vertex constants. ^{12}C levels deduced spectroscopic factors.
1996Ar07: ^{11}B(^{3}He,d) E=22.3-34 MeV, measured $\sigma(\theta)$, $\sigma(E_d)$. Deduced reaction mechanism. ^{12}C level deduced spectroscopic factors, vertex constants.
2012Sm06: XUNDL dataset compiled by TUNL, 2012.

Measured ^{11}B(^{3}He,d)^{12}C in search of a ^{12}C level at E_x=11.16 MeV with $J^{\pi}=2^+$ that was previously reported at E(^{3}He)=44 MeV (1971Re03).

A beam of E(^{3}He)=44 MeV ions impinged on a 98% enriched 395 μg/cm^2 self supporting ^{11}B target at the iThemba LABS. Scattered deuterons were measured at the focal plane of the K600 spectrometer at angles of θ_{lab}=25°, 30° and 35°. Additional measurement were made on a natural boron target with a high ^{16}O contamination. Analysis revealed numerous ^{12}C excited states, but no evidence was found for any state that could be identified with E_x=11.16 MeV.

^{12}C Levels

E(level)	J^{π}[#]	$T_{1/2}$[‡]	L[†@]	(2J+1)$S_{REL.}$[&]	Comments
0	0^+		1	5.4	T=0
4.44×10^3	2^+		1	0.78	T=0
7.66×10^3	0^+		1	0.078	T=0
9629. *10*	3^-		2	0.28	T=0 (2J+1)θ_p^2=0.048.
10.1×10^3?					
10.84×10^3 *2*	1^-,2^-	250 keV *30*	0	1.1	T=0 (2J+1)θ_p^2=0.040.
11.16×10^3 *5*	(2^+)			0.14	T=0 E(level): This level was reported in (1971Re03), but (2012Sm06) found evidence against its existence.
11.82×10^3 *2*	2^-	235 keV *30*	2	0.17	T=0 (2J+1)θ_p^2=0.073.
12.70×10^3 *1*	1^+		1	1.00	T=0 (2J+1)θ_p^2=0.13.
13.38×10^3 *2*	(2^-)	0.55 MeV *80*	0		T=0
14.71×10^3 *1*		<12 keV	0		
15.11×10^3	1^+		1	0.92	T=1
16.11×10^3	2^+		1	1.1	T=1
17.23×10^3	1^-				T=1
18.27×10^3 *5*	(4^-)	275 keV *40*	(2)		T=(0)
18.38×10^3	(3^-)	212 keV *40*	(2)		T=(1) Γ: From (1971Re03).
19.25×10^3	(1^-)				T=(1)
19.56×10^3 *5*	(4^-)	393 keV *65*	(2)		T=(1)
20.6×10^3	(3^-)	196 keV *40*	(2)		T=(0)
22.40×10^3 *8*	(1^-)	275 keV *40*	(2)		T=(1)

Continued on next page (footnotes at end of table)

^{11}B(^{3}He,d) 1961Hi08,1971Re03 (continued)

^{12}C Levels (continued)

† L_p.
‡ Deduced from Γ_{lab} (1961Hi08,1971Re03).
# From ^{11}B(d,n) and ^{11}B(^{3}He,d) in (1975Aj02).
@ From (1971Re03) and references in (1968Aj02).
& From (1971Re03), see other values given in (1967Fu07,1968Bo26,1969Mi15,1971Mu18,1993ar14,1996Ar07) and see comments in (1977Ad02).