^{58}Ni(t,^{3}He) 1985Aj02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja and B. Singh	ENSDF	31-Oct-2015

1985Aj02 (also 1984Aj03): E=25 MeV, Q3D spectrograph, FWHM≈23 keV. Measured σ(E,θ) from 5.5° to 50° (lab), DWBA and coupled- channel analysis.

2006Co14 (also 2005Ze04,2007Ze03): E=115 MeV/nucleon secondary triton beam was produced from primary α beam at 140 MeV/nucleon hitting a ^{9}Be target. The A-1200 fragment separator was used to separate triton beam. Magnetic spectrometer S-800 was used to detect ^{3}He particles. Time-of-flight method and energy loss measurements were used to identify ^{3}He particles. FWHM≈250 keV. Measured σ(q) from 0° to 4.5°. DWBA analysis. Large-scale shell-model calculations. Two pronounced groups were observed at 2 MeV and 4 MeV which were forward peaked indicating L=0 (Gamow-Teller) transitions. The $\sigma(\theta)$ distribution for peak in the 1.75-2.0 MeV range and 0° to 4.5°is consistent with mixed 1^+ and 2^+ states. At angles of 2°−3°, a wide structure between 7-15 MeV was observed with probable L=1 (dipole) transitions due to isovector spin giant dipole resonance (L=1, S=1, J^π=0$^-$,1$^-$,2$^-$) and its non-spin-flip partner (L=1, S=0, J^π=1$^-$).

2006Gu02: E=130 MeV. Magnetic spectrometer BBS was used to detect ^{3}He particles. FWHM≈350 keV. Measured σ(q) from 0.33° to 6.6°(c.m.). DWBA and RPA analysis. Two pronounced groups were observed at 2 MeV and 4 MeV which were forward peaked indicating L=0 (Gamow-Teller) transitions and a wide structure between 7-15 MeV was observed with probable L=1 (dipole) transitions.

^{58}Co Levels

E(level)	J^π[†]	L	E(level)	J^π[†]	L	E(level)	J^π[†]	L
0.0	2^+	2	1870[&] *10*	1^+	0+2	3237[‡] *15*		
25 *3*	5^+	4+6	1977 *10*	3^+	2+4	3290 *15*	(1^+)	0+2
53 *3*	4^+	4	2015 *10*			3346[‡] *15*		
112 *3*	3^+	2+4	2074 *10*	4^+,5^+	4	3403 *15*	4^+,5^+	4
367[#] *5*	3^+[#]		2102 *10*			3431 *15*	3^+	2+4
385[#] *10*	5^+[#]		2171[‡] *15*	3^+	2+4	3484 *20*		
460 *8*	4^+	4	2241 *10*	1^+	0+2	3518[@] *20*	(4^+)	
889 *8*	4^+,3^+	4	2336 *10*			3545 *20*		
1044[‡] *10*	3^+	2+4	2459[‡] *15*			3612[‡] *20*	(1^+)	0+2
1052 *8*	1^+	0+2	2481 *15*	2^+	2	3668[‡] *20*	(1^+)	0+2
1073 *15*			2523 *15*			3720[‡] *20*	(3^+)	2+4
1133 *15*			2634[‡] *15*	3^+,2^+	2,2+4	3781[‡] *15*		
1191 *10*	5^+	4+6	2700 *15*			3804 *20*		
1242[‡] *10*	2^+	2	2741 *15*	5^+	4+6	3890 *20*	(2^+)	2
1377[‡] *10*	1^+	0+2	2776 *15*			3925 *20*	(2^+,1^+)	2
1424 *8*	3^+	2+4	2858 *12*	4^+,5^+	4	3957 *20*		
1447 *10*	1^+	0+2	2893 *15*			4021 *20*	(3^+)	2+4
1527 *10*	2^+,3^+	2	2953 *15*			4053 *20*	2^+	2
1555 *10*	5^+	4+6	2997 *15*	2^+	2	4087[@] *20*	(4^+)	
1610 *10*	4^+,3^+	4	3069[@] *15*	5^+	4+6	4113 *20*		
1674 *10*	3^+,2^+	2,2+4	3100[‡] *15*	2^+,3^+	2	4170 *20*		
1738[‡] *10*	1^+	0+2	3154 *15*			4206[‡] *20*		
1843 *10*	3^+	2+4	3216 *20*	3^+	2+4	4287[‡] *20*		

[†] From $\sigma(\theta)$ and coupled-channels analysis normalized to seven lowest states with adopted J^π from Adopted Levels.

[‡] Unresolved group.

[#] Analyzed as a combined 367+385 unresolved group. The angular distribution could be fitted by L=2+4 corresponding to known 3^+ and 5^+ for the 367 and 385 levels, respectively.

[@] The $\sigma(\theta)$ distribution not shown in figure 6 of 1985Aj02.

[&] B(GT)=0.72 *5* (2006Co14).