^{60}Ni(^{3}He,α) 1978Zi01,1990Se07

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 151, 1 (2018)	1-Apr-2018

Others: 1965Br29, 1966Fo01, 1966Le12, 1968Ru02, 1969Ar20, 2013Sc06, 2013ScZZ. Also (p,d), ^{58}Ni(α,^{3}He),(d,p) were studied by 2013Sc06, 2013ScZZ.

1990Se07: E(^{3}He)=33 MeV; FWHM≈60 keV; θ(lab)=12.5°−115° in steps of 2.5°; ΔE-E telescopes and particle identification; 98.5% ^{60}Ni target. DWBA analysis of $\sigma(\theta)$.

1978Zi01: E(^{3}He)=38 MeV; FWHM≈40 keV, θ=9°−21°, magnetic spectrograph, particle identification. Measured $\sigma(\theta)$.

1968Ru02: E(^{3}He)≈25 MeV; 99.8% ^{60}Ni target, FWHM=100-140 keV, θ(c.m.)≈15°−93°. DWBA analysis of $\sigma(\theta)$. Same authors as 1965Br29.

1966Fo01: E(^{3}He)=15 MeV; 99.2% ^{60}Ni target, θ(C.M.)≈12°−93°, evaluator estimated FWHM≈40 keV (not stated by authors), semi detectors. DWBA analysis of $\sigma(\theta)$.

1965Br29: E(^{3}He)=24.5 MeV; 99.8% ^{60}Ni target, FWHM=100 keV, semi detectors, θ(lab)=15°−90° (5° steps).

^{59}Ni Levels

E(level)[†]	J$^\pi$[‡]	L	C^{2}S[#]	Comments
0.0	3/2$^-$	1	1.26	
338	5/2$^-$	3	1.66	
469	1/2$^-$	1	0.27	
878	3/2$^-$	1	0.19	
1192	5/2$^-$	3	0.12	
1313	1/2$^-$	1	0.26	
1681	5/2$^-$	3	0.24	
1951	7/2$^-$	3	0.91	
2414				From fig. 1 of 1990Se07 only.
2627	7/2$^-$	3	3.12	E(level): level assumed to be same as 2670 *35* level from 1965Br29.
3049	7/2$^-$	3	1.38	E(level): level assumed to be same as 3100 *35* level from 1965Br29.
3542				From fig. 1 of 1990Se07 only.
3730 *10*	7/2$^-$	3	0.34	
4218 *10*	7/2$^-$	3	1.12	E(level): 4181 in 1990Se07. Apparent doublet exists near 4200 *50* in 1966Fo01 (based on shape for 4200-keV peak).
4286 *10*	7/2$^-$	3[@]	0.39[@]	
4386 *10*	7/2$^-$	3[@]	0.39[@]	
4441 *10*	7/2$^-$	3[@]	0.38[@]	
4541 *10*	7/2$^-$	3[@]	0.17[@]	
4639	7/2$^-$	3	0.66	
4709 *10*	7/2$^-$	3[@]	0.38[@]	E(level): level assumed to be same as 4760 *35* level from 1965Br29.
5148				From fig. 1 of 1990Se07 only.
5264	7/2$^-$	3	0.13	Level assumed to be same as 5310 *35* level from 1965Br29.
5586	1/2$^+$,3/2$^+$	0,2	0.46,0.72	
5740 *35*				E(level): reported only by 1965Br29; peak (in spectrum of fig. 2) is too broad to be attributed to a single level.
5867	1/2$^+$,3/2$^+$	0,2	0.34,0.54	
6600 *35*				E(level): reported only by 1965Br29.
7068	7/2$^-$	3	0.13	
7330[&] *50*	7/2$^-$	3	1.41	^{59}Co 7/2$^-$ g.s. analogue.
8482	3/2$^-$	1	0.11	Possibly the ^{59}Co 1099-keV, 3/2$^-$ analogue (1990Se07).
9081	7/2$^-$	3	0.19	Possibly the ^{59}Co 1745-keV, 7/2$^-$ analogue (1990Se07).
10085	1/2$^+$,3/2$^+$	0,2	0.26,0.60	Possibly the ^{59}Co 2713-keV, 1/2$^+$ analogue (1990Se07).
10527	1/2$^+$,3/2$^+$	0,2	0.21,0.58	Possibly the ^{59}Co 3162-keV, 3/2$^+$ analogue (1990Se07).

[†] From 1978Zi01 if ΔE=10 keV, from 1965Br29 if ΔE=35 keV, from 1966Fo01 if ΔE=50 keV and from 1990Se07 if ΔE

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^{60}Ni(^{3}He,α) 1978Zi01,1990Se07 (continued)

^{59}Ni Levels (continued)

unstated. E from 1990Se07 deviates from adopted values by≤4 keV for E<3000.

‡ Assumed by authors for calculation of C^2S.

From comparison of $\sigma(\theta)$ with finite range DWBA calculations (1990Se07), except as noted. C^2S normalized so sum for $2p_{1/2}$, $2p_{3/2}$ and $1f_{5/2}$ transfer to E(level)≤1700 keV equals 4.

@ From 1978Zi01. Note that C^2S from 1978Zi01 and 1990Se07, in general, differ significantly.

& E=7332 in 1990Se07. The E=7520 *35* level of 1965Br29 may well be the same as this level since the authors′ stated E deviates significantly from an otherwise linear energy calibration for the spectrum in their fig. 2.