^{59}Ni(p,t) E=40 MeV 1978Na11,1976Na23

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. R. Bhat	NDS 85, 415 (1998)	24-Sep-1998

Target $J^{\pi}=3/2^-$; $T_{1/2}= 7.5\times10^4$ y. Reactor-produced target. Magnetic spectrograph; position-sensitive proportional counter, scintillator. Overall energy resolution (FWHM)=10 to 15 keV. 1976Na23 measured the Q value. 1978Na11 measured $\sigma(\theta)$, θ(c.m.)=6°−60°; DWBA.

^{57}Ni Levels

E(level)	J^{π}[†]	L[‡]	Comments
0.0	$3/2^-$	0+2	Additional information 1.
769 *5*		4(+2)	
1113 *5*		2	
2443 *3*		4(+2)	
2577 *3*			
3008 *3*	$3/2^-$	0+2	
3234 *3*	#	2	
3311 *3*			
3370 *3*		2	
3715 *5*		(2+4)	
3726 *5*		(2+4)	
3865 *5*		4	
3882 *5*		4	
4041 *5*			
4073 *5*		4	
4234 *5*	$(5/2)^-$[@]	4	
4374 *5*		4	
4462 *5*		2+4	
4577 *5*		2	
4606 *5*		2+4	
4880 *5*			
4925 *5*	$3/2^-$[&]	0+2	
5009 *5*			
5093 *5*			
5135 *5*		2+4	
5194 *5*	$3/2^-$	0+2	
5239 *5*		2	
5352 *5*			
5368 *5*			
5488 *6*		(2+4)	
5546 *6*		1[a]	
5561 *6*		1[a]	
5601 *8*			
5646 *8*			
5660 *8*			
5702 *9*			
5740 *9*			
5765 *9*			
5846 *9*		2+4	
5980 *9*		2+4	
6031 *10*		1+3[a]	
6079 *10*			
6231 *10*			
6322 *10*			
6328 *10*			
6338 *10*			

Continued on next page (footnotes at end of table)

^{59}Ni(p,t) E=40 MeV 1978Na11,1976Na23 (continued)

^{57}Ni Levels (continued)

E(level)	L‡	E(level)	Jπ†	L‡	E(level)	L‡	E(level)	L‡
6409 *10*		6935 *8*		2+4	7650 *8*		8477 *10*	(2+4)
6454 *10*	2+4	7131 *8*	$(5/2)^{-}$@	4	7671 *8*		8527 *10*	
6543 *10*	2+4	7187 *8*			7873 *8*		8551 *10*	
6631 *10*	2+4	7306 *8*			7904 *8*		8674 *10*	
6691 *10*		7424 *8*			8062 *8*		8763 *10*	
6711 *10*		7442 *8*			8103 *8*		8780 *10*	
6856 *10*		7534 *8*			8236 *8*		8872 *10*	2+4
6905 *8*	2+4	7551 *8*			8292 *8*	1[a]	8960 *10*	

† Predominantly L=0 transfer, except as noted.
‡ From comparison to $\sigma(\theta)$ from ^{60}Ni(p,t) (priv comm from a. Saha, k.k. Seth, and h. Nann to 1978Na11), except as noted.
# DWBA assuming pure (1f7/2,2p3/2) transfer fit the data well.
@ Transitions could be described as pure (2p3/2,1f5/2), suggesting $J^{\pi}=5/2^{-}$. However, this description may not be unique.
& May be explained as a 2p3/2 neutron weakly coupled to the 0^{+} state at 5.00 MeV in ^{56}Ni.
a From DWBA, assuming a (2p3/2,2s1/2) transfer.