Coulomb excitation **1974An20,1977Pa06,1986TaZV**

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	20-Jan-2020

No changes made since the 2015 update.
1977Pa06: (p,p′), E(p)=3.0-4.5 MeV, (α,α′), Eα=4.5-5.5 MeV. Measured Eγ, Iγ, γ(θ), semi, natural target.
1974An20: (α,α′), Eα=3.5,6.8 MeV, (^{12}C,^{12}C′), E=26 MeV. Measured Eγ, Iγ, semi, enriched target (85%).
1986TaZV: (p,p′), E(p)=2.0-4.6 MeV. Measured 67, 283, 656, 908, and 1015-keV levels by Ge(Li) with FWHM=2 keV.
Others: 2011TrZZ, 1974An17, 1974Le34, 1969Sh12, 1969Ga25, 1962Ri09.

^{61}Ni Levels

B(E2) from unweighted average of values from 1974An20 and 1977Pa06; the two are not in very good agreement with each other.

E(level)[†]	Jπ[‡]	$T_{1/2}$	Comments
0.0	3/2−		
67.1 *3*	5/2−	5.1 ns *3*	B(E2)↑=0.00069 *7* $T_{1/2}$: from 67γ(t) (1969Sh12). α(K)exp=0.13 for 67γ was used.
283.0 *4*	1/2−		B(E2)↑=0.0013 *1*
655.8 *4*	1/2−		B(E2)↑=0.0074 *10*
909.0 *4*	5/2−		B(E2)↑=0.0039 *26*
1014.7 *4*	7/2−	>1.7[#] ps	B(E2)↑=0.0088 *10*
1099.5 *4*	3/2−		B(E2)↑=0.0026 *13*
1132.3 *4*	5/2−	0.35[#] ps *4*	B(E2)↑=0.0128 *30*
1185.6 *5*	3/2−	0.12[#] ps *3*	B(E2)↑=0.0048 *10*
1457.9 *8*	7/2−		γ to the g.s. as seen in other reaction was masked by 1458γ from ^{58}Ni, as 1977Pa06 used a natural target.
1610.2 *11*	5/2−		

[†] From least-squares fit to Eγ data.
[‡] From Adopted Levels.
[#] From Doppler shift attenuation (1974Le34).

γ(^{61}Ni)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[@]	δ[&]	Comments
67.1	5/2−	67.3 *5*	100	0.0	3/2−	(M1+E2)	0.0076 *5*	
283.0	1/2−	283.0 *5*	100	0.0	3/2−			
655.8	1/2−	373.0 *5*	16.6	283.0	1/2−			
		588.4 *5*	8.0	67.1	5/2−			
		655.8 *5*	75.4	0.0	3/2−			
909.0	5/2−	842.4 *5*	35.7	67.1	5/2−			
		908.5 *5*	64.3	0.0	3/2−			
1014.7	7/2−	947.7 *5*	68.0	67.1	5/2−			
		1014.8 *5*	32.0	0.0	3/2−			
1099.5	3/2−	816.3 *5*		283.0	1/2−			
		1032.4 *5*		67.1	5/2−			
		1099.6 *5*		0.0	3/2−			
1132.3	5/2−	1065.0 *5*	36.7	67.1	5/2−			
		1132.4 *5*	63.3	0.0	3/2−	(M1+E2)	0.43 *7*	
1185.6	3/2−	1185.6 *5*		0.0	3/2−	(M1+E2)	0.17 *3*	δ: with Iγ=86.

Continued on next page (footnotes at end of table)

Coulomb excitation **1974An20,1977Pa06,1986TaZV** **(continued)**

$\gamma(^{61}Ni)$ (continued)

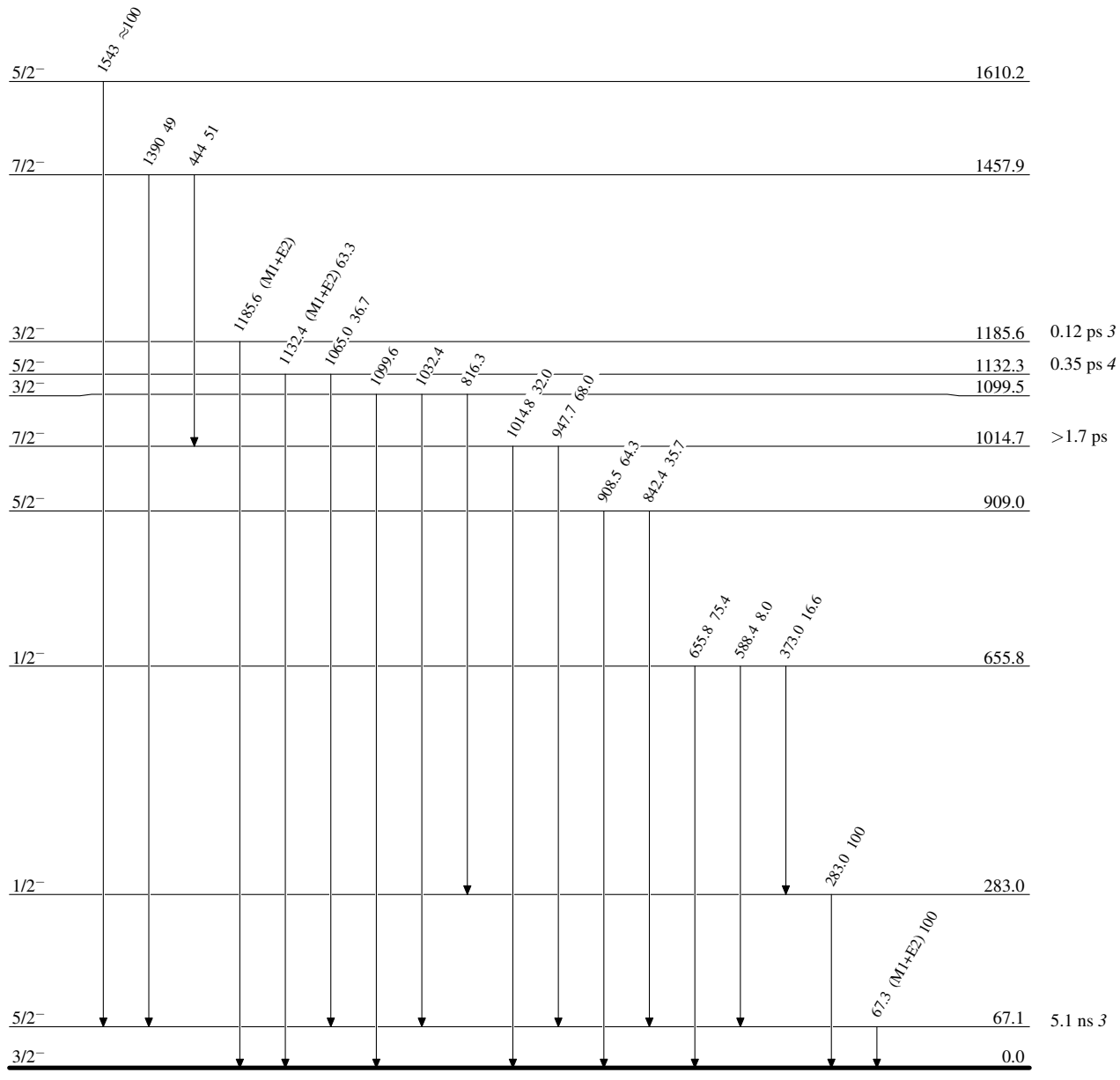
E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π
1457.9	$7/2^-$	444	51[#] *1*	1014.7	$7/2^-$
		1390	49[#] *1*	67.1	$5/2^-$
1610.2	$5/2^-$	1543	≈100	67.1	$5/2^-$

[†] From 1974An20, except for the decay of 1458- and 1610-keV levels, which are from 1977Pa06.
[‡] Relative branching ratios from 1974An20, except for decay of 1458- and 1610-keV levels, which are from 1977Pa06.
[#] The branching ratios of γ rays from the 1458 level in 1977Pa06 are not considered reliable as the most intense γ ray to the g.s. is missing, most likely, masked by a strong 1458γ from ^{58}Ni.
[@] From J^π difference.
[&] From B(E2) and $T_{1/2}$. For suggested δ from $\gamma(\theta)$ (inconsistent with other measurements), see 1977Pa06.

Coulomb excitation 1974An20,1977Pa06,1986TaZV

Level Scheme

Intensities: % photon branching from each level



$^{61}_{28}Ni_{33}$