Coulomb excitation **2020Ma37,2014Al20,2001Ke02**

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 178,41 (2021).	12-Nov-2021

2020Ma37: ^{208}Pb(^{64}Ni,^{64}Ni′γ) E(^{64}Ni)=272 MeV ^{64}Ni beam from ATLAS-ANL facility. Measured Eγ, Iγ, (particle)γ-coin, yields using GRETINA array for γ detection and CHICO2 array for scattered particles. Deduced E2 matrix elements and B(E2) using GOSIA least-squares fitting code for measured yields. See also 2012Br15.

2014Al20: ^{12}C(^{64}Ni,^{64}Ni′γ) E=1.8 MeV/nucleon ^{64}Ni beam from 25-MV tandem accelerator at HRIBF-ORNL facility. Target was ≈1 mg/cm^2 natural carbon. Recoiling nuclei were detected in BareBall array of CsI crystals. Measured Eγ, Iγ, (particle)γ-coin, (particle)$\gamma(\theta)$ using CLARION array of nine HPGe Clover detectors. Deduced Coulomb excitation yields and B(E2) for first 2$^+$ state. Comparison with previous experimental results, evaluations and shell-model calculations.

2001Ke02, 2001Ke08: ^{12}C(^{64}Ni,^{64}Ni′γ) E=155 and 160 MeV ^{64}Ni beam from the Munich Tandem accelerator. Target was 0.45 mg/cm^2 ^{nat}C on a 3.82 mg/cm^2 Gd foil. Scattered particles were detected with a Si counter and γ rays were detected with BaF_2 scintillators. Measured g factor by transient-field technique and lifetime (of first 2$^+$ state) by DSA method.

1978Ha13 (also 1979BrZP): (^{32}S,^{32}S′γ) E=72 MeV ^{32}S beam from the Rutgers-Bell tandem Van de Graaff. Target was 0.8 mg/cm^2 enriched Ni on a 2.6 mg/cm^2 iron foil. Measured g factor by $\gamma(\theta$,H) on recoil nuclei.

1971ChZT (also 1972ChXY): (^{16}O,^{16}O′γ) E=30-34 MeV ^{16}O beam.

1960An07 (also 1959Al95): (^{14}N,^{14}N′γ) E=36 MeV ^{14}N beam and (α,α′γ) E=8-15 MeV α beams from the PTI cyclotron. Measured Eγ, γ yields. Deduced B(E2).

^{64}Ni Levels

E(level)†	J$^\pi$†	$T_{1/2}$‡	Comments
0.0	0$^+$		
1345.8	2$^+$	1.088 ps *35*	μ=+0.37 *6* (2001Ke02) Q=0.35 *20* (1971ChZT) $T_{1/2}$: Other: 0.91 ps 4 from B(E2)↑=0.0703 *29*. Q: reorientation method (1971ChZT,1971ChZF). g factor=+0.184 *31* (2001Ke02), +0.46 *13* (1978Ha13). B(E2)↑=0.0703 *29*, weighted average of 0.070 *10* (2020Ma37), 0.0718 *29* (2014Al20), 0.065 *4* (1971ChZT), 0.087 *17* (1960An07), 0.077 *15* (1960An07), 0.090 *18* (1959Al95).
2276.6	2$^+$		
2610.0	4$^+$	1.73 ps *28*	
2867.4	0$^+$		
3025.8	0$^+$		
3463.6	0$^+$		
3749.0	2$^+$		

† From the Adopted Levels. Energies are rounded values.
‡ From DSAM method (2001Ke02,2001Ke08).

γ(^{64}Ni)

E$_\gamma$†	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Comments
930.8	2276.6	2$^+$	1345.8	2$^+$	B(E2)↓=0.0073 *8* (2020Ma37)
1264.3	2610.0	4$^+$	1345.8	2$^+$	
1345.8	1345.8	2$^+$	0.0	0$^+$	
1473	3749.0	2$^+$	2276.6	2$^+$	B(E2)↓<0.00032 (2020Ma37) E$_\gamma$: from 2020Ma37 only; not seen in other studies.
1521.6	2867.4	0$^+$	1345.8	2$^+$	B(E2)↓=0.0048 *3* (2020Ma37)
1680.1	3025.8	0$^+$	1345.8	2$^+$	B(E2)↓=0.0010 *1* (2020Ma37)
2117.9	3463.6	0$^+$	1345.8	2$^+$	B(E2)↓<0.00013 (2020Ma37)

† Rounded values from the Adopted Gammas, unless otherwise noted.

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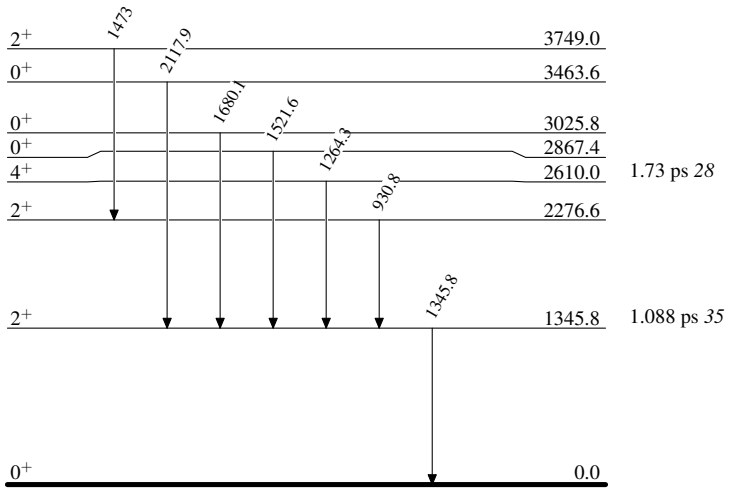
Level Scheme



$^{64}_{28}Ni_{36}$