^{40}Ar(n,n′γ),(n,n) 1965Ma41,2012Ma23

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 140, 1 (2017)	30-Sep-2015

1965Ma41 (also 1966Ma10): E=3-4.5 MeV neutron beam was produced from the Texas Nuclear Corporation′s 2 MeV Van de Graaff accelerator via the D(d,n) reaction. Target was liquid argon in cylindrical polyethylene containers 2.54 cm in diam. and 5.1 cm in length. γ rays were detected with a two-crystal total-absorption gamma-ray spectrometer. Measured Eγ, γ(θ). Deduced levels, J, π.

2012Ma23: E=1-30 MeV neutron beams were produced via spallation on a natural W target by an 800-MeV proton linear accelerator beam at the Los Alamos Neutron Science Center (LANSCE). Target was argon gas. γ rays were detected with the GEANIE array of 20 HPGe detectors with bismuth germanate escape suppression shields. Measured σ(E$_n$) for six γ-ray transitions. Comparisons with calculations by the TALYS and COH$_3$ reaction codes.

2013Ma39: (n,n) E=6.0 MeV. Measured elastic scattering cross section.

^{40}Ar Levels

E(level)[†]	J$^\pi$[#]	Comments
0	0$^+$	
1461	(2$^+$)	
2121	0$^+$	J$^\pi$: 680γ(θ) is isotropic (1965Ma41).
2524	(2$^+$)	
2893[‡]	4$^+$[@]	
3208	(4$^+$)	J$^\pi$: inconsistent with 2$^+$ from Adopted Levels.
3465[‡]	6$^+$[@]	
3512[‡]	2$^+$[@]	
3681[‡]	3$^-$[@]	
4230[‡]	4$^{(-)}$[@]	

[†] Rounded values from Adopted Levels.
[‡] Reported in 2012Ma23 only.
[#] Assignments for excited states are from 1965Ma41 based on deduced γ-ray multipolarities (parentheses added by evaluator), unless otherwise noted.
[@] From Adopted Levels.

γ(^{40}Ar)

E$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[#]
547[‡]	4230	4$^{(-)}$	3681	3$^-$	
572[‡]	3465	6$^+$	2893	4$^+$	
660	2121	0$^+$	1461	(2$^+$)	
1063	2524	(2$^+$)	1461	(2$^+$)	(E2)
1432[‡]	2893	4$^+$	1461	(2$^+$)	
1461	1461	(2$^+$)	0	0$^+$	(E2)
1747	3208	(4$^+$)	1461	(2$^+$)	(E2)
2051[‡]	3512	2$^+$	1461	(2$^+$)	
2220[‡]	3681	3$^-$	1461	(2$^+$)	
2524	2524	(2$^+$)	0	0$^+$	(E2)

[†] Rounded values from Adopted Gammas.
[‡] Observed in 2012Ma23 only.
[#] Deduced by 1965Ma41 based on measured γ(θ) (parentheses added by evaluator).

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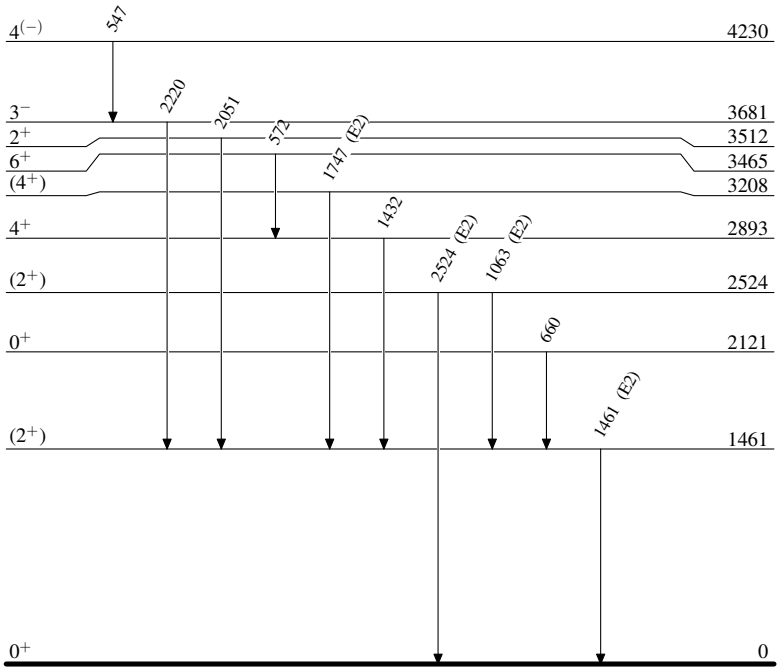
Level Scheme



$^{40}_{18}Ar_{22}$