^{24}Mg(p,n) 1989Ki14,1982Or01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia, Anagha Chakraborty	NDS 186, 2 (2022)	31-Mar-2022

Other references: 1980Be23, 1971Mo34, 1991An01, 1992Ta04.

1989Ki14: ^{24}Mg(p,n), E=35 MeV, 99.9% enriched target. Beam swinger, measured En(θ), 0° to 110°. DWBA analysis. Deduced level, L, spin-parity. Authors mention it as a high resolution measurement without any specific datum/data.

1982Or01: ^{24}Mg(p,n), E=35 MeV; measured σ(En), $\sigma(\theta)$, time-of-flight. Deduced level, spin, parity, stretched particle-hole configuration, multipole character. DWBA analysis.

1971Mo34: ^{24}Mg(p,n), E=23 MeV; measured En. Deduced levels. Energy resolution was about 40 keV for 6 MeV neutrons.

1991An01: ^{24}Mg, E=36 MeV; measured $\sigma(\theta$n, En), $\sigma(\theta)$. Deduce levels, Gamow-Teller transition strength distribution. Resolution.

1992Ta04: ^{24}Mg(p,n), E=136 MeV; plastic scintillator. Measured $\sigma(\theta)$, s(En), Neutrons were detected 0°, 24°, and 45° with respect to the undeflected proton beam, time-of-flight. Deduced stretched states, spectroscopic strengths. The distorted-wave impulse approximation (DWIA) and large basis shell model calculations. Resolution of about 320 keV for detectors 0° and 24° stations and about 480 keV for detector at 45°.

^{24}Al Levels

1992Ta04 report level energies 1.6, 4.7, 3.9 MeV of $J^\pi=5^+$ and 5.5, 8.2, 8.5, 8.7, 9.2, 9.7 MeV of $J^\pi=6^-$. Poor energy resolution and only closely matching levels compared to other works are listed in the table.

1991An01 report level energies 0.44, 1.07, 1.58, 2.98, 3.33, 4.69, 6.46, 6.87, 7.56, 8.48, 8.81, 10.28, and 10.95 MeV and corresponding σ at 0° and Gamow-Teller strength. A time resolution of 825 ps provided an energy resolution from 300 to 400 keV. The levels are not listed in the table.

E(level)[†]	J^π[‡]	L[&]	S[@]	Comments
0	4^+		1.6	
441 *5*	1^+	0	0.57	E(level): From 1971Mo34. Other: 439 *10* (1989Ki14).
514 *5*	2^+	2	0.64	E(level): From 1971Mo34. Other: 514 *50* (1989Ki14).
1116 *10*	1^+	0	0.61	E(level): Other: 1120 *9* (1971Mo34).
1292 *7*	3^+		1.0	E(level): From 1971Mo34. Other: 1270 *50* (1989Ki14).
1563 *10*	5^+		1.4	E(level),J^π: From text in 1989Ki14. Other: 1.6 MeV is reported in 1992Ta04. $J^\pi=5^+$ from $\sigma(\theta)$ and DWBA. Other: 1578 *10* (1971Mo34).
1645 *13*	$(2)^+$[#]	2	0.7	E(level): Weighted average of 1641 *50* (from text in 1989Ki14), 1626 *25* (1982Or01), and 1651 *13* (1971Mo34). Uncertainty is the lowest input value.
2380 *50*	$(2)^+$[#]	2	0.7	
2550 *50*	3^+		1.0	
2851 *10*	2^+	2	1.0	
3023 *10*	1^+	0	0.5	
3317 *10*	2^+	2(+0)	1.0	
3490 *10*	1^+	2	1.0	
3700 *50*				E(level): From text in 1989Ki14.
3905 *10*	2^-		1.0	
4316 *10*	(4^+)		0.8	J^π: Negative parity can not be excluded, 1989Ki14 note.
4491 *10*	3^-		1.4	
4758 *10*	4^-		0.8	
5545 *25*	6^-	6		T=1 E(level),J^π,L: From 1982Or01. Isovector M6 transition observed and J^π assigned on the basis of excitation energy, angular distribution, and strength.

[†] From 1989Ki14, except where otherwise noted. Uncertainty based on authors statement – uncertainties estimated to be less than 10 keV, except for weak and unresolved states, to which uncertainties up to 50 keV.

[‡] Assigned by the authors based on $\sigma(\theta)$, DWBA analysis, and shell model calculations (1989Ki14).

[#] Authors (1989Ki14) tentatively assign 2^+ for the weakly populated state, based on the DWBA analysis of measured $\sigma(\theta)$, do not

Continued on next page (footnotes at end of table)

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^{24}Al Levels (continued)

disagree for an L=2 transfer and comparison with the results of shell model calculations.
@ Normalization factor introduced to optimize DWBA fitting (1989Ki14).
& From 1989Ki14.