^{26}Mg(p,$\alpha\gamma$) 1972Li02,1966Po06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia[#], A. Chakraborty[##]	NDS 171,1 (2021)	1-Jun-2020

Other references: 1967Ri04, 1971Ph01, 1974Pr12, 1987Do06.

1972LI02: ^{26}Mg(p,$\alpha\gamma$) E=14.25 MeV. Measured $\alpha\gamma(\theta)$, p$\gamma(\theta)$, Iγ, multigap magnetic spectrometer, NaI(Tl). Also limited data for ^{23}Na(α,$\alpha\gamma$).

1966Po06: 95% enriched ^{26}Mg metallic target, E_p=9.3-10.5 MeV; α particle were detected by annular surface barrier and γ by NaI detectors. Measured α-γ coincidence, angular correlations, deduced excited level spin, multipole mixing ratio of γ transitions.

All data from 1972Li02, except otherwise noted.

^{23}Na Levels

E(level)	J$^\pi$ †	Comments
0	3/2	
440 *2*	5/2	
2077 *2*	7/2	
2391 *2*	1/2	
2640 *2*	1/2	
2703 *2*	9/2	
2981 *2*	3/2,(5/2)	
3679 *3*	3/2	
3851 *4*	5/2	J$^\pi$: From transition strength analysis (1972Li02).
3912 *4*	5/2	
4430 *6*		
4775 *6*	5/2,7/2	
5380 *6*	3/2,5/2	
5538 *9*	11/2	
5740 *7*	5/2,3/2	
5926 *6*		
5967 *5*		
6043 *5*		
6124 *10*		
6200 *7*		
6238 *7*	(13/2,9/2)	
6311 *5*	1/2	
6356 *9*		
6584 *5*	9/2,5/2	

† From γ ray angular correlation studies (1972Li02), except where otherwise noted.

γ(^{23}Na)

E_i(level)	J_i^π	E_γ †	I_γ	E_f	J_f^π	Mult. ‡	δ	Comments
440	5/2	440	100	0	3/2	D+Q	+0.09 *1*	A_2=−0.21 *2*; A_4=+0.06 *3* A_2=−0.229 *15*; A_4=+0.004 *3* (1966Po06) δ: Other: +0.08 *2* (1966Po06).
2077	7/2	1637	90 *2*	440	5/2	D+Q	+0.22 *2*	A_2=+0.10 *2*; A_4=+0.02 *3* A_2=+0.06 *4*; A_4=+0.03 *7* (1966Po06) I_γ: Other: 91 *2* (1966Po06). δ: Other: +0.20 *3* for 7/2 and −0.14 *8* for (3/2) (1966Po06).
		2077	10 *2*	0	3/2	Q+O	−0.14 *11*	A_2=−0.27 *8*; A_4=−0.51 *12* I_γ: Other: 9 *2* (1966Po06).

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^{26}Mg(p,$\alpha\gamma$) 1972Li02,1966Po06 (continued)

γ(^{23}Na) (continued)

E_i(level)	J^π_i	E_γ†	I_γ	E_f	J^π_f	Mult.‡	δ	Comments
2391	1/2	1951	37 *3*	440	5/2			A_2=−0.06 *6*; A_4=−0.04 *9* (1966Po06) I_γ: Wt. ave. of 39 *3* (1972Li02) and 33 *4* (1966Po06).
		2391	63 *3*	0	3/2			A_2=+0.08 *6*; A_4=−0.03 *6* (1966Po06) I_γ: Wt. ave. of 61 *3* (1972Li02) and 67 *4* (1966Po06).
2640	1/2	2640	100	0	3/2			A_2=+0.03 *2*; A_4=+0.01 *2* (1972Li02) A_2=+0.00 *3*; A_4=−0.02 *5* (1966Po06)
2703	9/2	626	35 *2*	2077	7/2	D+Q	+0.10 *2*	A_2=−0.14 *4*; A_4=+0.10 *6* A_2=−0.09 *9*; A_4=−0.02 *2* (1966Po06) I_γ: Wt. ave. of 37 *2* (1972Li02) and 32 *2* (1966Po06). δ: Other: +0.12 *4* (1966Po06) for 9/2.
		2263	65 *2*	440	5/2	Q(+O)	−0.04 *7*	A_2=+0.53 *10*; A_4=−0.32 *17* A_2=+0.41 *9*; A_4=−0.34 *13* (1966Po06) I_γ: Wt. ave. of 63 *2* (1972Li02) and 68 *2* (1966Po06). δ: Wt. ave. of −0.02 *13* (1972Li02) and −0.05 *7* (1966Po06) for 9/2.
2981	3/2,(5/2)	2541	45 *2*	440	5/2	D+Q	−0.05 *5*	A_2=+0.06 *4*; A_4=−0.11 *7* A_2=+0.22 *20*; A_4=+0.33 *30* (1966Po06) I_γ: Other: 40 *5* (1966Po06). δ: Others: −0.3 *3* or −3 *2* for 3/2 (1966Po06).
		2981	55 *2*	0	3/2	D(+Q)	−0.01 *2*	A_2=+0.35 *2*; A_4=−0.06 *4* A_2=+0.52 *6*; A_4=−0.01 *10* (1966Po06) I_γ: Other: 60 *5* (1966Po06). δ: Others: +0.11 *5* or +2.7 *4* for 3/2 and +0.54 *11* for (5/2) (1966Po06). The other higher value of −4.1 *7* in 1972Li02 can be rejected on the basis of unlikely high quadrupole transition strength.
3679	3/2	1039	14 *2*	2640	1/2	D+Q	−0.22 *10*	A_2=−0.77 *5*; A_4=−0.06 *8*
		1288	2 *1*	2391	1/2			
		3239	81 *2*	440	5/2	D(+Q)	−0.02 *6*	A_2=−0.07 *2*; A_4=−0.10 *3*
		3679	3 *2*	0	3/2			
3851	5/2	1211	7 *2*	2640	1/2			
		1774	53 *6*	2077	7/2	D(+Q)	−0.02 *5*	A_2=−0.13 *4*; A_4=+0.08 *7*
		3411	17 *5*	440	5/2	D+Q	−0.21 *14*	A_2=−0.05 *4*; A_4=−0.11 *7*
		3851	23 *5*	0	3/2			
3912	5/2	931		2981	3/2,(5/2)			
		1835		2077	7/2			
		3472		440	5/2			
		3912		0	3/2			
4430		4430	100	0	3/2			
4775	5/2,7/2	2072	15 *2*	2703	9/2			
		2698	25 *2*	2077	7/2	D(+Q)	−0.01 *16*	A_2=+0.44 *9*; A_4=−0.24 *14* δ: −0.01 *16* or +1.2 *4* for 7/2, and −0.06 *3* for 5/2 (1972Li02). Larger value +1.2 *4* rejected by the evaluators for RUL using data in the adopted dataset.
		4335	54 *2*	440	5/2	D+Q	+0.19 *3*	A_2=+0.02 *3*; A_4=+0.03 *4* δ: +0.19 *3* for 7/2, −0.37 *3* for 5/2 (1972Li02).
		4774	6 *2*	0	3/2			
5380	3/2,5/2	3303	25 *2*	2077	7/2	D+Q	+0.15 *8*	A_2=−0.12 *6*; A_4=−0.08 *9* δ: +0.15 *8* for 5/2, and −0.10 *5* or −2.00 *3* for 3/2 (1972Li02).
		4939	63 *2*	440	5/2	D+Q	−0.27 *5*	A_2=+0.14 *3*; A_4=−0.05 *5*

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^{26}Mg(p,$\alpha\gamma$) 1972Li02,1966Po06 (continued)

γ(^{23}Na) (continued)

E_i(level)	J^π_i	E_γ †	I_γ	E_f	J^π_f	Mult. ‡	δ	Comments
								δ: −0.27 *15* for 5/2, and −0.23 *6* or −2.1 *3* for 3/2 (1972Li02).
5380	3/2,5/2	5379	12 *2*	0	3/2	D+Q	−0.05 *5*	A_2=−0.54 *12*; A_4=+0.23 *18* δ: −0.05 *15* for 5/2, and 0.6 ≤δ ≤ 3.2 for 3/2 (1972Li02).
5538	11/2	2835	76 *6*	2703	9/2	D+Q	+0.17 *3*	A_2=+0.6 *4*; A_4=−0.04 *6*
		3461	24 *5*	2077	7/2	Q(+O)	−0.06 *20*	A_2=−0.45 *13*; A_4=−0.45 *31*
5740	5/2,3/2	5299	37 *2*	440	5/2	D+Q	−0.7 *9*	A_2=+0.23 *7*; A_4=−0.21 *11* δ: −0.7 *9* or 3.0 ≤δ≤ 59 for 5/2, and −0.38 *20* or −1.7 *6* for 3/2 (1972Li02).
		5739	63 *2*	0	3/2	D+Q	+0.21 *3*	A_2=+0.02 *5*; A_4=+0.11 *7* δ: +0.21 *3* for 5/2, and −0.25 *5* for 3/2 (1972Li02).
5967		3327	100	2640	1/2			I_γ: (100) in 1972Li02.
6043		2192	49 *8*	3851	5/2			
		2364	17 *10*	3679	3/2			I_γ: (17±10) in 1972Li02.
		3340	8 *3*	2703	9/2			I_γ: (8±3) in 1972Li02.
		5602	26 *4*	440	5/2			
6238	(13/2,9/2)	3535	100	2703	9/2	D+Q		A_2=+0.20 *8*; A_4=−0.38 *13* I_γ: (100) in 1972Li02. δ: δ=−0.15 14 for 13/2 or +1.6 5 for 9/2 (1972Li02).
6311	1/2	3920	100	2391	1/2			A_2=−0.02 *5*; A_4=+0.05 *8* I_γ: (100) in 1972Li02.
6584	9/2,5/2	3881	18 *3*	2703	9/2			
		4507	36 *3*	2077	7/2			A_2=−0.59 *9*; A_4=−0.29 *13* δ: δ=+0.44 14 for 5/2 or +0.13 7 for 9/2.
		6143	45 *4*	440	5/2			A_2=+0.30 *7*; A_4=−0.34 *9* δ: δ=+2.6 4 for D+Q from 5/2 or −0.10 4 for Q+O from 9/2.

† From level energy difference. Recoil energy subtracted and rounded to nearest keV.
‡ Based on angular distribution coefficients (1972Li02) – assigned by evaluators.

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Level Scheme

Intensities: % photon branching from each level