C(^{36}Mg,^{33}Naγ) 2014Do05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 199,1 (2025)	30-Sep-2024

2014Do05: E=236 MeV/nucleon ^{36}Mg beam was produced by fragmentation of 345 MeV/nucleon ^{48}Ca primary beam on a ^{9}Be target at the RIBF-RIKEN facility. Fragments were separated by BigRIPS fragment separator using Bρ-ΔE-Bρ method. The secondary reaction targets were 2.54 g/cm^2 thick carbon and 2.13 g/cm^2 thick CH_2 polyethylene. γ rays were detected using DALI2 array of 186 large NaI(Tl) detectors. Measured Eγ, Iγ, $\gamma\gamma$-coin. Deduced levels, J^π. Comparison with shell-model calculations.

^{33}Na Levels

E(level)[†]	J$^\pi$[‡]
0[#]	(3/2$^+$)
425[#] *5*	(5/2$^+$)
1115[#] *14*	(7/2$^+$)
1875[#] *19*	(9/2$^+$)

[†] From Eγ values.
[‡] From shell-model calculations using the SPDF-M effective interaction.
[#] Band(A): K^π=(3/2$^+$) band. Rotational band predicted by shell-model calculations.

γ(^{33}Na)

E$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$
425 *5*	425	(5/2$^+$)	0	(3/2$^+$)
690[‡] *13*	1115	(7/2$^+$)	425	(5/2$^+$)
760[‡] *13*	1875	(9/2$^+$)	1115	(7/2$^+$)

[†] From 2014Do05.
[‡] 690γ and 760γ are from a doublet in γ-ray spectrum (2014Do05).

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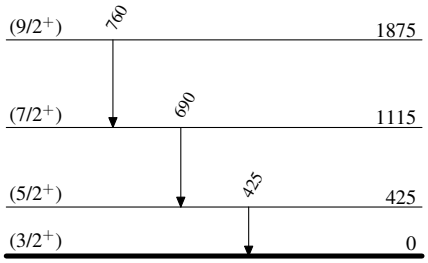
Level Scheme



$^{33}_{11}Na_{22}$

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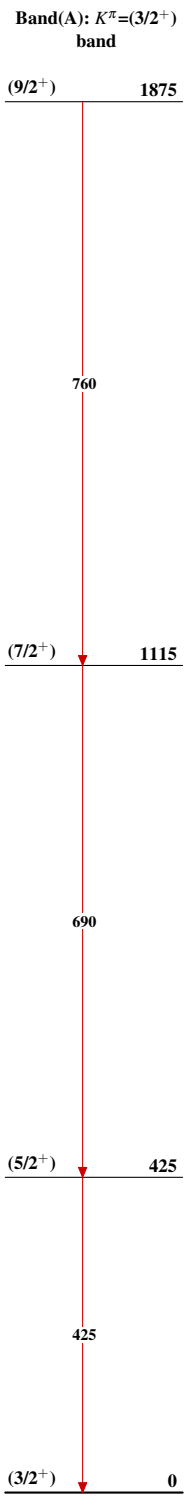

$^{33}_{11}Na_{22}$