^{1}H(^{33}Mg,^{33}Mg′γ),(^{34}Mg,^{33}Mg′γ) 2006El03,2006FuZX

History

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

Includes He(^{33}Mg,^{33}Mg′γ) from 2006FuZX.

2006El03: E=50 MeV ^{33,34}Mg beams were produced by fragmentation of 94 MeV/nucleon ^{40}Ar primary beam from the RIKEN accelerator on a ^{181}Ta production target. Fragments were separated by RIPS fragment separator. The secondary target was liquid hydrogen. Reaction products and scattered particles were detected and identified by a parallel-plate avalanche counter (PPAC) and a silicon detector telescope and γ rays were detected with an array of 146 NaI(Tl) detectors surrounding the target. Deduced mass deformation and neutron deformation parameters.

2006FuZX: He(^{33}Mg,^{33}Mg′γ) E=40 MeV/nucleon ^{33}Mg beam was produced by fragmentation of 63 MeV/nucleon ^{40}Ar primary beam from the RIKEN accelerator on a carbon or beryllium target. Fragments were separated by the RIPS fragment separator. The secondary target was liquid helium. Reaction products and scattered particles were detected and identified by a parallel-plate avalanche counter (PPAC) and a silicon detector telescope; γ rays were detected with an array of NaI(Tl) detectors surrounding the target. Report γ-ray peaks at 299.4 *11* and 483.6 *10*.

^{33}Mg Levels

E(level)[†]	J$^{\pi}$[‡]	Comments
0	(5/2$^+$)	J$^{\pi}$: 3/2$^-$ in Adopted Levels.
483.6	(7/2$^+$)	J$^{\pi}$: (5/2$^-$) in Adopted Levels. Deformation parameters: β_{mass}=0.47 *8*, β_n=0.46 *10* (2006El03).
561 *17*		

† From Eγ data.

‡ Assumed assignments by 2006El03, considering the g.s. and 484 level to have the same parity as proposed by 2002Pr09 in Coulomb excitation. Adopted assignments are different and given under comments.

γ(^{33}Mg)

E$_\gamma$	E$_i$(level)	J$_i^{\pi}$	E$_f$	J$_f^{\pi}$	Comments
[x]299.4 *11*					E$_\gamma$: from 2006FuZX, possibly the same as the unplaced 297.9γ reported in ^{33}Na decay (2001Nu02).
483.6 *10*	483.6	(7/2$^+$)	0	(5/2$^+$)	E$_\gamma$: from 2006FuZX. Other: 484 *20* (2006El03). σ=33 mb *10* in ^{1}H(^{33}Mg,^{33}Mg′γ) (2006El03).
561 *17*	561		0	(5/2$^+$)	E$_\gamma$: from ^{1}H(^{34}Mg,^{33}Mg′γ) in 2006El03, possibly the same as 546.2γ in ^{33}Na β^- decay.

[x] γ ray not placed in level scheme.

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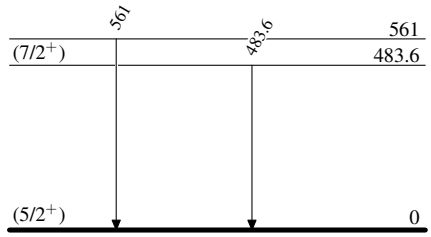
Level Scheme



$^{33}_{12}Mg_{21}$