Coulomb excitation 2011Se05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 184, 29 (2022)	24-Jun-2022

2011Se05: ^{109}Ag(^{31}Mg,^{31}Mg′) E=3.0 MeV/nucleon ^{31}Mg beam was produced by bombarding a 50 g/cm^2 UC_x target with 1.4 GeV protons from the CERN PS booster. Secondary target was enriched ^{109}Ag of thickness 1.9 mg/cm^2 and 4.0 mg/cm^2. Scattered beam and recoiling target nuclei detected by 500 μm thick double sided silicon strip detector (DSSSD) and de-excitation γ-rays detected by MINIBALL γ-spectrometer which consists of eight triple cluster detectors in close geometry each containing six-fold segmented HPGe crystals. Measured Eγ, Iγ, particle-γ prompt coincidence, γ yields. Deduced levels, J, π, B(E2), B(M1) (via GOSIA code).

Other: 2000PrZX: ^{197}Au(^{31}Mg,^{31}Mg′).

All data are from 2011Se05, unless otherwise noted.

^{31}Mg Levels

E(level)	J^π †	Comments
0	$1/2^+$	
50	$3/2^+$	
221	$3/2^{(-)}$	
673	$3/2^+$	B(E2)↑=0.0021 *8* (2011Se05) B(E2)(up) value: excitation from $1/2^+$ g.s.
945	$5/2^+$	B(E2)↑=0.0182 *20* (2011Se05) B(E2)↑ value: excitation from $1/2^+$ g.s. Other: B(E2)↑≤0.0125 *47* (2000PrZX).

† As proposed by 2011Se05.

$\gamma(^{31}Mg)$

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α †	Comments
50	$3/2^+$	50	100	0	$1/2^+$	[M1]	0.01319 *18*	α(K)=0.01235 *17*; α(L)=0.000807 *11*; α(M)=2.94×10^{-5} *4*
221	$3/2^{(-)}$	171		50	$3/2^+$	[E1]	1.04×10^{-3} *2*	α(K)=0.000975 *14*; α(L)=6.26×10^{-5} *9*; α(M)=2.307×10^{-6} *32*
		221		0	$1/2^+$	[E1]		
673	$3/2^+$	623		50	$3/2^+$	[M1,E2]		B(E2)↓=0.0024 *12* (2011Se05)
		673		0	$1/2^+$	[M1,E2]		B(E2)↓=0.0011 *5* (2011Se05)
945	$5/2^+$	724	24 *7*	221	$3/2^{(-)}$	[E1]		B(E1)↓>8.9×10^{-6} (2011Se05)
		895	74 *12*	50	$3/2^+$	[M1+E2]		E_γ: other: 905 *13* (2000PrZX). B(M1)=0.1-0.5, depending on δ value and absolute E2 strength (2011Se05).
		(945)		0	$1/2^+$			E_γ,I_γ: not observed in 2011Se05. Energy is from level-energy difference; 2011Se05 give an upper limit of 2.6 *8* for intensity.

† Additional information 1.

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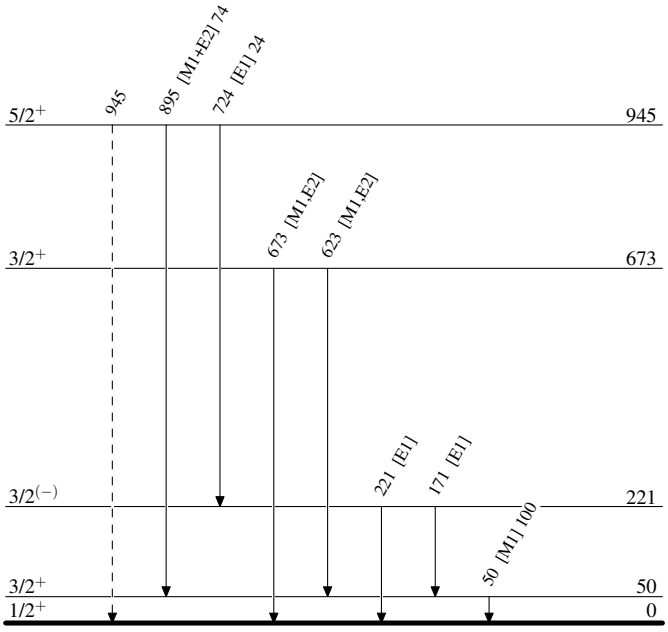
Legend

Level Scheme

Intensities: % photon branching from each level

γ Decay (Uncertain)



$^{31}_{12}Mg_{19}$