Coulomb excitation   2017El04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	A. Negret and B. Singh	NDS 203,283 (2025)	20-Jan-2025

2017El04: intermediate energy Coulomb excitation. Beam=^{86}Se, 79 MeV/nucleon produced in ^{9}Be(^{96}Zr,X),E=120 MeV/nucleon using K500 and K1200 coupled cyclotrons at NSCL-MSU facility, and fragments separated using A1900 fragment separator. Target=^{209}Bi, 246 mg/cm^2 thick. Measured scattered particles using S800 spectrograph, Eγ, Iγ, (particle)γ-coin using CAESAR array of 192 closely packed CsI(Na) crystals. Deduced cross section for population of first 2^+ state, and B(E2). Comparison with shell-model calculations.

High-lying 2^+ states were not observed by 2017El04, thus no feeding correction was applied. In the literature, levels at 1399 (decaying by 695 and 1399 γ rays) and 2208 keV (decaying by 1504 and 2208 γ rays) are tentatively assigned as (2^+). All the γ transitions were below the sensitivity limit of the present work. 2017El04 estimated that B(E2) would be reduced by at most 23% if feeding intensities were to be taken from shell-model calculations.

^{86}Se Levels

E(level)[†]	J$^\pi$	T$_{1/2}$	Comments
0	0^+		
704	2^+	7.8 ps 12	B(E2)↑=0.211 32 (2017El04)
			B(E2)↑=0.217 33 if 613 peak included in the analysis. Systematic uncertainty is included by the authors.
			Measured σ=230 mb 30 (2017El04).
			σ=227 mb 34 if 613 peak is not included in the analysis, and 233 mb 35 if this peak is included.
			J$^\pi$: from the Adopted Levels.
			T$_{1/2}$: deduced by evaluators from B(E2)↑ value in 2017El04.

† From Eγ.

$\gamma(^{86}$Se$)$

E$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.	Comments
704	704	2^+	0	0^+	E2	E$_\gamma$: from Adopted Levels, Gammas dataset.
						2017El04 discuss a peak at 613 keV at the low-energy shoulder of the 704-keV peak. A weak 613γ was reported by 2015Ma61 in ^{86}As decay in coin with 704 gamma, suggesting a level at 1317 keV. This conclusion is not supported by 2017El04 who claim that 613γ is not in coincidence with 704γ.

† From 2017El04.

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Level Scheme

$^{86}_{34}$Se$_{52}$