^{150}Sm(μ^-,nγ) 2019Zi01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 185, 2 (2022)	23-Aug-2022

2019Zi01 (also 2010Zi01): negative muon beams were produced from the μE4 and μE1 lines of the Paul Scherrer Institute (Ψ) in Switzerland. Target was 320 mg/cm^2 Sm_2O_3 powder (92.6% enriched in ^{150}Sm). μ x-rays and γ rays were detected with HPGe detectors. Measured Eγ, Iγ, E(μ x-ray), I(μ x-ray), γ(t). Deduced muon lifetime, and partial capture rates to excited states. Additional information 1.

^{149}Pm Levels

Muon disappearance lifetime=82.3 ns *5* (capture+decay), from which the total muon capture rate is deduced as λ_{cap}=11.75×10^6 s^{-1} *7* (2019Zi01).

E(level)†	J$^\pi$‡	T$_{1/2}$‡	Comments
0	7/2$^+$		Capture rate to excited states (directly feeding g.s.)=2.93×10^6 s^{-1} *60*, corresponding to a percentage of 24.9% *51* per muon capture (2019Zi01).
114.0	5/2$^+$		
188.4	3/2$^+$		
211.2	5/2$^+$		
240.2	11/2$^-$	35 μs *3*	Capture rate to this isomer=1.80×10^6 s^{-1} *31*, corresponding to a percentage of 15.3% *26* per muon capture (2019Zi01).
287.9	9/2$^+$		
387.0	1/2$^+$		
396.4	5/2$^+$		

† From Eγ data of 2019Zi01.
‡ From the Adopted Levels.

γ(^{149}Pm)

E$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$
114.0	114.0	5/2$^+$	0	7/2$^+$
188.4	188.4	3/2$^+$	0	7/2$^+$
198.6	387.0	1/2$^+$	188.4	3/2$^+$
208.0	396.4	5/2$^+$	188.4	3/2$^+$
211.2	211.2	5/2$^+$	0	7/2$^+$
287.9	287.9	9/2$^+$	0	7/2$^+$

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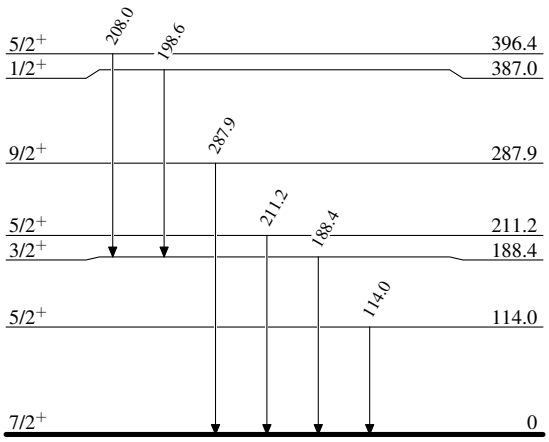
Level Scheme



$^{149}_{61}Pm_{88}$