^{40}Ca(μ^-,νpnγ) 2006Me08

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 152, 1 (2018)	30-Sep-2017

2006Me08: the μ^- beam was obtained from decay of π^- beam at 90 MeV/c provided by the beamline M9B at TRIUMF. Targets were pure natural calcium turnings with some oxide on the surface. γ rays were detected with two HPGe detectors. Measured Eγ, Iγ, E(x ray), I(x ray), $\gamma\gamma$-coin,. Deduced levels, muon capture yields.

Muonic Lyman series for natural Calcium

μ x ray	Energy	Intensity in percent
2p-1s	783.659 *25*	83.8 *10*
3p-1s	940.63 *10*	6.2 *2*
4p-1s	995.48 *10*	2.0 *1*
5p-1s	1020.81 *10*	2.0 *1*
6p-1s	1034.62 *10*	1.8 *1*
7p-1s	1042.71 *20*	1.4 *1*
(8-∞)p-1s	1046-1063	2.8 *4*

Muonic Balmer series for natural Calcium

μ x ray	Energy	Intensity in percent
3d-2p	157.35 *13*	64.5 *9*
4d-2p	212.03 *10*	8.85 *20*
5d-2p	237.31 *10*	4.34 *20*
6d-2p	251.06 *10*	3.29 *20*
7d-2p	259.45 *10*	1.37 *20*
(8-∞)d-2p	261-277	1.4 *3*

^{38}Ar Levels

E(level)[†]	J$^\pi$[†]	Percent Yield per muon capture[‡]	Comments
0.0	0^+		
2167.5	2^+	3.8 *6*	Known cascading=2.8% *3*.
3376.9	0^+	0.58 *22*	
3810.2	3^-	1.04 *22*	Known cascading=0.96% *9*.
3936.5	2^+	0.11 *11*	
4480.0	4^-	0.96 *9*	
4565.5	2^+	0.27 *13*	
4585.9	5^-		
4709.3	0^+		
5157.3	2^+	<0.8	
5349.4	4^+	<0.3	
5552.2	1^+,2^+	<0.5	

[†] From Adopted Levels. Energies are round-off values.
[‡] Corrected for known cascading.

^{40}Ca(μ^-,νpnγ) 2006Me08 (continued)

γ(^{38}Ar)

E_γ [†]	Percent γ-ray yield	E_i(level)	J_i^π	E_f	J_f^π	Comments
105.9		4585.9	5^-	4480.0	4^-	Percent γ-ray yield: not given since below detection threshold.
669.8	0.96 *9*	4480.0	4^-	3810.2	3^-	
772.8	<1	4709.3	0^+	3936.5	2^+	
986.7	<0.2	5552.2	$1^+,2^+$	4565.5	2^+	
1209.4	0.54 *20*	3376.9	0^+	2167.5	2^+	
1220.8	<0.2	5157.3	2^+	3936.5	2^+	
1413.1	<0.1	5349.4	4^+	3936.5	2^+	
1615.7	<0.2	5552.2	$1^+,2^+$	3936.5	2^+	
1642.7	2.0 *2*	3810.2	3^-	2167.5	2^+	
1770	<0.16	3936.5	2^+	2167.5	2^+	
2167.4	6.6 *5*	2167.5	2^+	0.0	0^+	
2398.1	0.26 *13*	4565.5	2^+	2167.5	2^+	
2989.7	<0.4	5157.3	2^+	2167.5	2^+	
3182.2	<0.2	5349.4	4^+	2167.5	2^+	
3384.6	<0.2	5552.2	$1^+,2^+$	2167.5	2^+	
3936.1	0.1 *1*	3936.5	2^+	0.0	0^+	

[†] Round-off values from Adopted Gammas.

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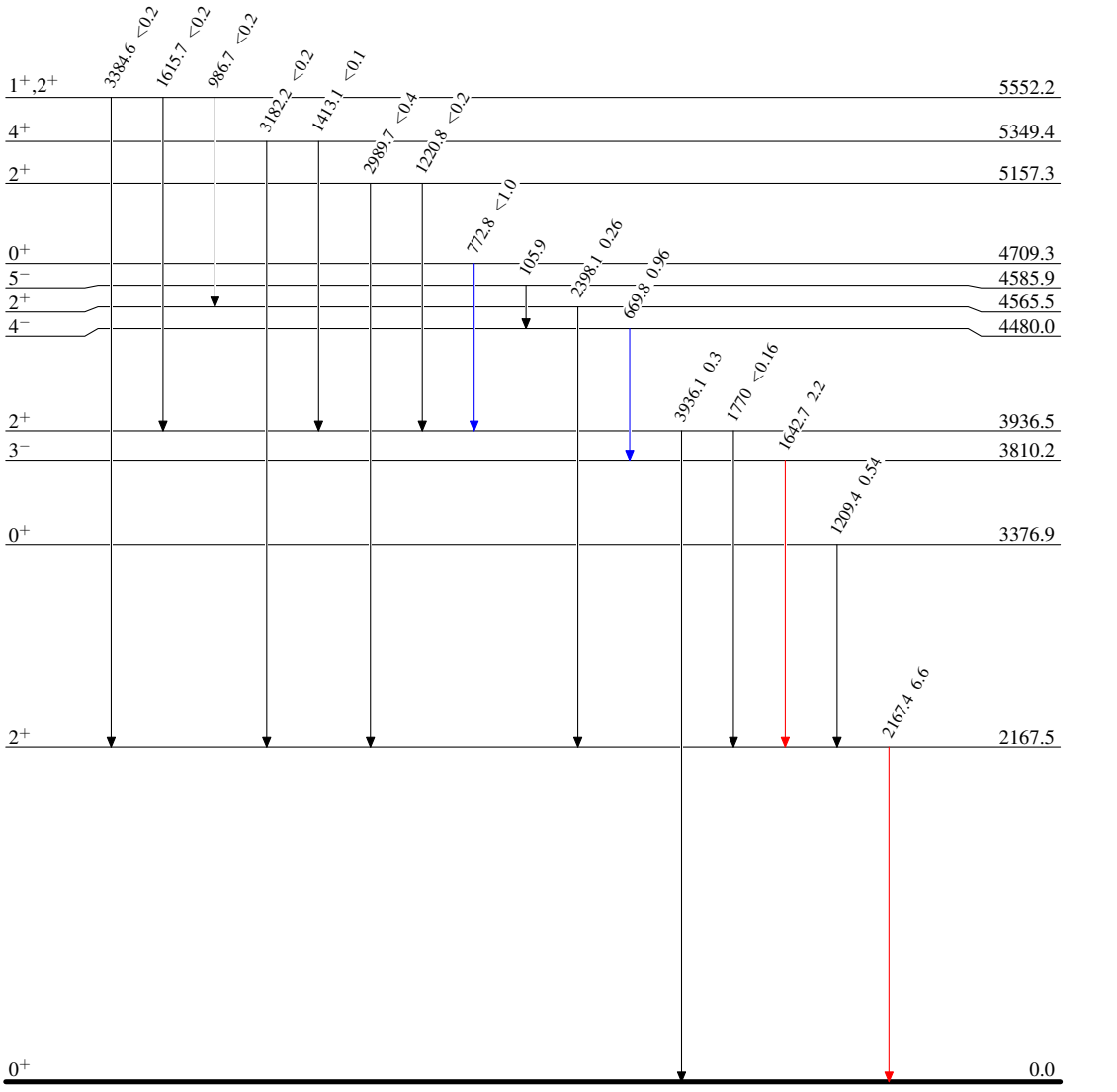
Level Scheme

Intensities: Percent γ-ray yield per muon capture



$^{38}_{18}Ar_{20}$