

$^9\text{Be}(^{45}\text{Cl}, ^{44}\text{Cl}\gamma)$ 2009Ri04

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh		NDS 190,1 (2023)	20-Jun-2023

2009Ri04: E=99.6 MeV/nucleon ^{45}Cl beam was produced by fragmentation of a 140 MeV/nucleon ^{48}Ca primary beam from the Coupled-Cyclotron Facility of the National Superconducting Cyclotron Laboratory at Michigan State University. Fragments were separated using the A1900 fragment separator. Beam particles were identified using time-of-flight measurements. Reaction cross section was determined from the number of ingoing ^{45}Cl and outgoing ^{44}Cl particles. γ rays were detected by the Segmented Germanium Array (SeGA), consisting of 32 high-purity germanium detectors. Deduced levels, J, π , $T_{1/2}$ by line-shape method, transition strength. Comparisons with theoretical calculations.

^{44}Cl Levels

E(level)	J π [†]	$T_{1/2}$	L	Comments
0	2 ⁻		1	L: from momentum distributions of the recoiling ^{44}Cl particles and eikonal-model calculations. L=1 implies knockout of a neutron from 1p _{3/2} orbit. $\sigma=16.6$ mb <i>I4</i> (2009Ri04).
475	4 ⁻	1.0 ns +35-7		E(level),J π : shell-model calculations predict 4 ⁻ isomer at 620 keV de-exciting by an E2 transition to a g.s. and M1 transition to a 515 level. $T_{1/2}$: measured by 2009Ri04 from line-shape method.

[†] From shell-model predictions (2009Ri04).

$\gamma(^{44}\text{Cl})$

E_γ	$E_i(\text{level})$	J π_i	E_f	J π_f	Mult.	Comments
475	475	4 ⁻	0	2 ⁻	[E2]	B(E2) _↓ =0.0022 +45-17 (2009Ri04)
^x 515 [†]						
^x 720 [†]						

[†] Due to low $\gamma\gamma$ -coin statistics, this γ ray was not placed in level scheme, although it is quite intense in $\gamma(\text{recoils})$ -coin spectrum.

^x γ ray not placed in level scheme.

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Level Scheme

