$^{12}C(^{48}Ca,X\gamma)$ 2016Lu14

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

2016Lu14: ^{48}Ca beam of E=66.7 MeV/nucleon at mid-target was produced from a ^{48}Ca primary beam impinging upon a 1363 mg/cm^2 ^{9}Be production target at the Coupled Cyclotron Facility of NSCL. Fragments were separated with a 240 mg/cm^2 Al degrader in the A1900 fragment separator. The secondary target was a 149 mg/cm^2 glassy ^{12}C. Projectile-like reaction residues were detected and identified in the S800 spectrograph and γ rays were detected by the Gamma Ray Energy Tracking In-beam Nuclear Array (GRETINA) consisting of seven detector modules each containing four high-purity, 36-fold segmented Ge crystals. Measured Eγ, Iγ, $\gamma\gamma$-coin, projectile-γ-coin. Deduced levels, J, π. Comparisons with large-scale shell-model calculations. Systematics of neighboring even-even isotopes.

^{38}S Levels

E(level)†	J$^\pi$‡	Comments
0	0^+	
1292 *4*	2^+	
2807 *8*	(2^+)	
2826 *7*	4^+	
3659 *9*	(6^+)	$T_{1/2}$: reduced energy and tail suggests $T_{1/2}$ between 70 ps and 140 ps based on GEANT simulations.

† From a least-squares fit to γ-ray energies.
‡ From Adopted Levels.

$\gamma(^{38}S)$

E$_\gamma$	I$_\gamma$‡	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Comments
^{x}380† *5*	5 *1*					
^{x}768† *5*	7 *1*					
833 *5*	25 *3*	3659	(6^+)	2826	4^+	E$_\gamma$: from GEANT simulations position and shape consistent with emission of 849 keV γ ray.
1292 *4*	100 *10*	1292	2^+	0	0^+	
1515 *6*	10 *2*	2807	(2^+)	1292	2^+	
1534 *5*	29 *4*	2826	4^+	1292	2^+	
^{x}2344† *9*	10 *2*					

† Tentative identifications of γ-ray peaks (2016Lu14).
‡ Relative intensities.
^{x} γ ray not placed in level scheme.

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Level Scheme

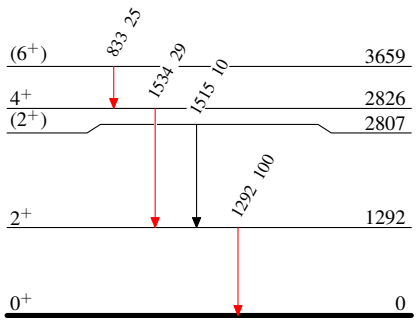
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{38}_{16}S_{22}$