

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

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Full Evaluation	Jun Chen	NDS 149, 1 (2018)	1-Jan-2018

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 ^9Be 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 E_γ , I_γ , $\gamma\gamma$ -coin, projectile- γ -coin. Large-scale shell-model calculations.

Authors state that from the present data on ^{39}S it is hardly possible to propose a firm level scheme, not just due to the lack of coincidences but also related to the expected structure at low energies; two low-lying nanosecond isomers are expected based on shell-model calculations but in-beam γ -ray spectroscopy at beam velocities in this study has limited sensitivity to nanosecond isomers.

 $\gamma(^{39}\text{S})$

Observed coincidences: 337γ - 466γ , 370γ - 533γ (weak), 337γ - 466γ (weak).

E_γ	I_γ^\ddagger
$^{x337} 4$	28 5
$^{x370}^\dagger 6$	9 3
$^{x392} 6$	42 7
$^{x466} 4$	71 10
$^{x533}^\dagger 4$	38 7
$^{x702} 4$	42 8
$^{x1518} 4$	100 15
$^{x1655} 6$	59 11
$^{x1728} 5$	43 9

† Newly identified γ rays. Authors claim that 370γ feeds the state that emits 533γ based on observed coincidence.

‡ Relative intensities.

x γ ray not placed in level scheme.