^{208}Pb(^{48}Ca,Xγ) 2012Mo11

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 157, 1 (2019)	15-Apr-2019

Also includes ^{64}Ni(^{48}Ca,Xγ) from 2012Mo11.

2012Mo11 (also 2012Le19,2011Mo02,2011Le09): two experiments performed at LNL-Legnaro of INFN using PRISMA-CLARA system. Reactions used were: 1. ^{64}Ni(^{48}Ca,Xγ),E=282 MeV. Target=0.98 mg/cm^2. Projectile-like fragments were selected using PRISMA magnetic spectrometer. Measured Eγ, Iγ, (^{50}Ca)γ-coin, $\gamma(\theta)$ and γ(lin pol) using CLARA array of 23 Compton-suppressed HPGe clover detectors. 2. ^{208}Pb(^{48}Ca,Xγ),E=310 MeV. Target=1.0 mg/cm^2 evaporated on a 1.0 mg/cm^2 Ta layer, with a 4 mg/cm^2 Mg foil placed after the target as an energy degrader. Projectile-like fragments were selected using PRISMA magnetic spectrometer. Half-lives of excited states were measured using differential Recoil-Distance Doppler-Shift (RDDS) method. Comparisons with full *fp* shell-model calculations.

2009Va06 (also 2009Me23,2009Me05): ^{48}Ca beam produced at E=310 MeV by the LNL Tandem-ALPI accelerator complex. Reaction products passed through a Mg degrader, before being selected by the magnetic spectrometer PRISMA. Measured γ-spectra in coincidence mode using the CLARA array, consisting of 23 Compton suppressed Clover detectors, 12 of which were used to measure half-lives. Measured Eγ, Iγ, (^{50}Ca)γ-coin, level half-lives using the Recoil-Distance Doppler-Shift (RDDS) method and the CLARA-PRISMA spectrometers with gates set on total kinetic energy loss (TKEL). Only the first 2^+ state was studied in this experiment.

2005Br18: ^{208}Pb(^{48}Ca,X),E=280 MeV. Measured Eγ, Iγ, $\gamma\gamma$-coin using GASP and Gammasphere arrays. Deduced levels, J^π, configurations. See results in ^{238}U(^{48}Ca,Xγ) dataset.

^{50}Ca Levels

E(level)†	J$^\pi$‡	T$_{1/2}$#	Comments
0.0	0^+		
1026.8	2^+	66.5 ps *21*	T$_{1/2}$: recoil-distance Doppler-shift method (2009Va06) with gate on total kinetic energy gating loss (TKEL). Other: a preliminary value of 70.7 ps *28* from 2009Me23.
2998	(2^+)	<0.69 ps	
3997.1	(3^-)	<0.69 ps	
4515.3	4^+	<1.04 ps	
4830.8	(4^-)	<0.69 ps	
5110.1	(5^-)	<0.69 ps	

† From 2012Mo11 based on their Eγ data.
‡ As given in 2012Mo11, based on previous assignments for low-lying levels and $\gamma(\theta)$ in their work.
# From 2012Mo11 using RDDS, unless otherwise noted.

γ(^{50}Ca)

E$_i$(level)	J$_i^\pi$	E$_\gamma$†	I$_\gamma$†	E$_f$	J$_f^\pi$	Mult.‡	Comments
1026.8	2^+	1027	100	0.0	0^+	E2	A$_2$=+0.51 *6* POL=+0.11 *8*.
2998	(2^+)	1970	100	1026.8	2^+	(D)	A$_2$=−0.07 *18* Mult.: 2012Mo11 give (M1+E2).
3997.1	(3^-)	2971	100	1026.8	2^+	D	A$_2$=−0.34 *14* Mult.: 2012Mo11 give (E1).
4515.3	4^+	3488		1026.8	2^+	(E2)	A$_2$=+0.41 *18* Mult.: 2012Mo11 give E2.
4830.8	(4^-)	833	100	3997.1	(3^-)	(D)	A$_2$=+0.09 *9* Mult.: 2012Mo11 give (M1).
5110.1	(5^-)	595		4515.3	4^+	D	A$_2$=−0.06 *12* Mult.: 2012Mo11 give (E1).

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^{208}Pb(^{48}Ca,Xγ) 2012Mo11 (continued)

$\gamma(^{50}Ca)$ (continued)

† From 2012Mo11, unless otherwise noted.
‡ From $\gamma(\theta$,pol) in 2012Mo11.

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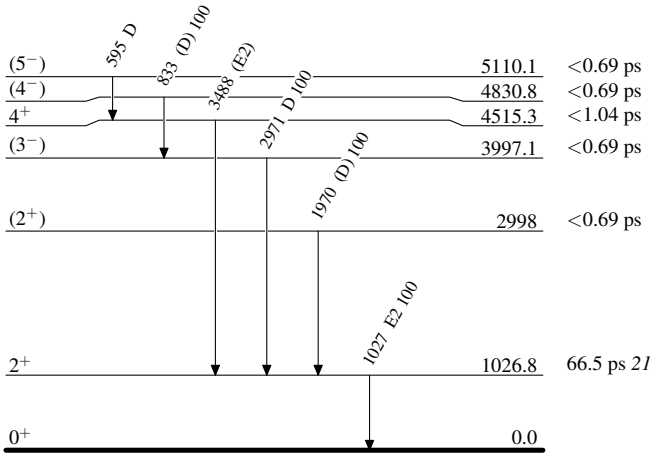
Level Scheme

Intensities: Relative photon branching from each level



$^{50}_{20}Ca_{30}$