

¹⁰⁸Cd($\alpha,3n\gamma$) 1979Ha12

Type	Author	History	Citation	Literature Cutoff Date
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1979Ha12: E(α)=30-67 MeV, SF cyclotron, Institute of Nuclear Study, University of Tokyo, Target: 1.1 mg/cm² (82.7 % ¹⁰⁸Cd).
 Detectors: one Ge LEPS (FWHM 528 eV at 136 keV), two Ge(Li) (FWHM 2.2 keV at 1.33 MeV). Measured: E γ , I γ , $\gamma\gamma$, $\gamma(\theta)$, I γ from 44 MeV data.
 Other: **1969Ya05** (E(α)=50 MeV, 336.9 γ , 1084.2 γ , 1104.9 γ , 1241.6 γ , 1257.0 γ are shown in single spectrum).
 The level scheme in **1979Ha12** are proposed by assuming 1243.8 γ and 1255.8 γ feeding ground state, which in fact feed a level at E=14 keV according to $\gamma\gamma$ -coincidence measurements in ¹⁰⁹Sb EC decay (**2002Re14**) and in ($\alpha,n\gamma$) (**1999Da05**). Therefore, all the levels in **1979Ha12** have to be moved up by about 14 keV, see Adopted Levels.

¹⁰⁹Sn Levels

E(level) [†]	J π [‡]	Comments
0.0	5/2 ⁺ #	
14.0	(7/2 ⁺)#	Additional information 1. E(level): round-off value from Adopted Levels.
1257.8 5	11/2 ⁺	
1269.8 @ 5	11/2 ⁻	
2090.5 7	15/2 ⁺	
2351.0 @ 7	15/2 ⁻	
3301.8 @ 9	19/2 ⁻	
3313.5 9	(19/2 ⁻)	
3320.8 9		
3475.2 10		
3865.2 12		

[†] From a least-squares fit to E γ 's (by evaluators), with the energy of the first excited state fixed at E=14.0 keV, the round-off value from Adopted Levels. Placements of γ -ray transitions are based on Adopted Gammas and different from placements in **1979Ha12**. See comments on level scheme.

[‡] From **1979Ha12**.

From Adopted Levels.

@ Band(A): $\nu h_{11/2}$ coupled to core vibrations.

$\gamma(^{109}\text{Sn})$

E γ [†]	I γ [†]	E _i (level)	J π _i	E _f	J π _f	Mult. [†]	Comments
173.4 5	13 2	3475.2		3301.8	19/2 ⁻	(M1+E2)	Mult.: A ₂ /A ₀ =0.06 15, A ₄ /A ₀ =-0.020 20.
390.0 5	21 3	3865.2		3475.2			
832.7 5	38 4	2090.5	15/2 ⁺	1257.8	11/2 ⁺	E2	Mult.: A ₂ /A ₀ =0.296 14, A ₄ /A ₀ =-0.14 3.
950.8 5	26 4	3301.8	19/2 ⁻	2351.0	15/2 ⁻	E2	Mult.: A ₂ /A ₀ =0.26 5, A ₄ /A ₀ =-0.24 12, $\Delta J=0$ possible.
962.5 5	11 3	3313.5	(19/2 ⁻)	2351.0	15/2 ⁻	(E2)	Mult.: A ₂ /A ₀ =0.25 7, A ₄ /A ₀ =0.05 10.
^x 966.1 5	15 3						
1081.2 5	44 6	2351.0	15/2 ⁻	1269.8	11/2 ⁻	E2	Mult.: A ₂ /A ₀ =0.22 3, A ₄ /A ₀ =-0.077.
1230.3 5	16 3	3320.8		2090.5	15/2 ⁺	E2	Mult.: A ₂ /A ₀ =0.22 3, A ₄ /A ₀ =-0.014 15.
1243.8 5	79 9	1257.8	11/2 ⁺	14.0	(7/2 ⁺)		
1255.8 5	100	1269.8	11/2 ⁻	14.0	(7/2 ⁺)	M2	Mult.: A ₂ /A ₀ =0.158 11, A ₄ /A ₀ =0.006 27.

[†] from **1979Ha12**. $\Delta E\gamma$ were assigned by the evaluators.

^x γ ray not placed in level scheme.

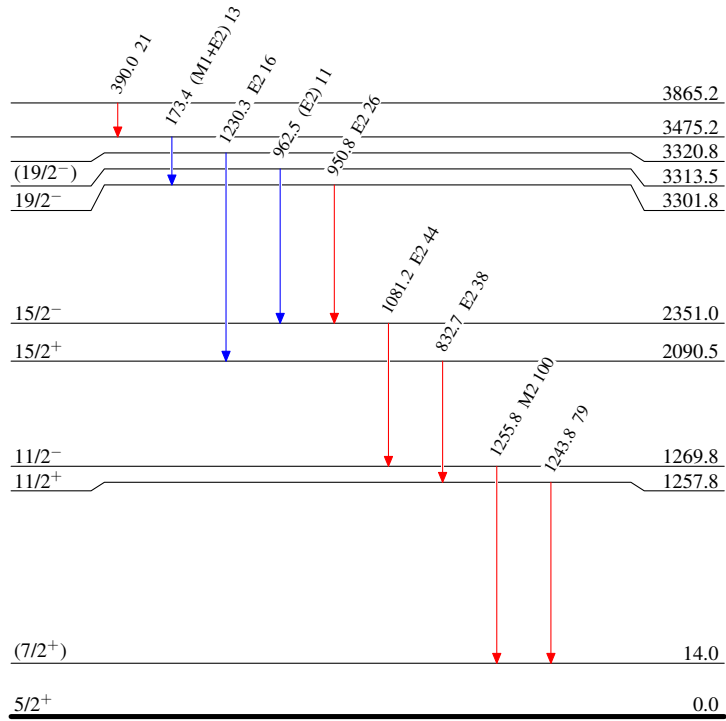
$^{108}\text{Cd}(\alpha,3n\gamma)$ 1979Ha12

Level Scheme

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$

 $^{109}_{50}\text{Sn}_{59}$

$^{108}\text{Cd}(\alpha,3n\gamma)$ 1979Ha12

Band(A): $\nu h_{11/2}$
coupled to core
vibrations

19/2⁻ 3301.8

951

15/2⁻ 2351.0

1081

11/2⁻ 1269.8

$^{109}_{50}\text{Sn}_{59}$