^{106}Cd(^{58}Ni,p3nγ) 2011Sa59

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 176, 1 (2021)	1-May-2021

2011Sa59 was compiled for XUNDL database by W. D. Kulp (NNDC, BNL) and edited by B. Singh (McMaster).

E=310 MeV (100 hours of beam time). Reaction products separated using recoil ion transport unit (RITU) gas-filled separator and implanted into DSSDs in the Gamma Recoil Electron Alpha Tagging (GREAT) spectrometer.

Prompt γ transitions identified with JUROGAM gamma-ray spectrometer using recoil decay tagging technique. Measured Eγ(α,p), Iγ(α,p), recoil-γ(α, p)-γ-t.

Delayed γ ray assignments to ^{160}Re made using correlations with characteristic proton and alpha decay of the ^{160}Re ground state.

Transition ordering and placement uncertain due to insufficient statistics for γ-γ coincidence analysis.

Level ordering assumed based on systematics of odd-odd N=85 isotones.

2011Sa59 observed 39γ and 96γ transitions reported in 2011Da01 from the decay of the (9$^+$) isomer of ^{160}Re (see IT decay dataset) that confirm the assignment of the γ rays reported in this dataset to ^{160}Re.

2011Sa59 confirm findings of 2011Da01, but do not present independent Eγ, Iγ, or gamma-ray placement data. No mention is made of 50-keV γ ray reported in 2011Da01, but may be present in Figure 4(b) of 2011Sa59 as a small peak (most of the intensity of this γ is taken by internal conversion).

^{160}Re Levels

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	Comments
184 *4*	(9$^+$)	2.8 μs *1*	E(level),J$^\pi$,T$_{1/2}$: from Adopted Levels.
184+x[#]	(10$^+$)		
1021.4+x[#] *3*	(12$^+$)		
1647.5+x[#] *6*	(14$^+$)		
1824.7+x[#] *6*	(16$^+$)		

[†] From Eγ data.

[‡] Assigned by 2011Sa59 from systematics of N=85 isomers.

[#] Band(A): γ sequence based on (10$^+$). Possible configuration=$\pi h_{11/2}\otimes\nu f^2_{7/2}\otimes\nu h_{9/2}$.

γ(^{160}Re)

E$_\gamma$	I$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Comments
x		184+x	(10$^+$)	184	(9$^+$)	E$_\gamma$: based on Fig. 5 of 2011Sa59 of the systematics of energy levels built upon 9/2$^-$ and 10$^+$ states in N=85 isotones one expects x<81 keV.
[x]135.1 *4*	17 *6*					
177.2 *2*	37 *7*	1824.7+x	(16$^+$)	1647.5+x	(14$^+$)	
[x]325.9 *8*	16 *5*					
[x]334.1 *5*	20 *6*					
[x]381.9 *7*	18 *5*					
[x]437.7 *4*	10 *4*					
[x]444.6 *5*	17 *7*					
[x]448.7 *8*	9 *5*					
[x]510.5 *4*	39 *8*					
[x]519.8 *6*	20 *6*					
[x]557.1 *2*	9 *1*					
[x]560.6 *2*	8 *1*					
626.1 *5*	62 *11*	1647.5+x	(14$^+$)	1021.4+x	(12$^+$)	
837.4 *3*	100 *11*	1021.4+x	(12$^+$)	184+x	(10$^+$)	Observation of x rays, 38-keV, and 96-keV transitions in coin with 837γ indicates that 837-keV transition populates isomeric

Continued on next page (footnotes at end of table)

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$\gamma(^{160}Re)$ (continued)

E_γ	E_i(level)	Comments
		state in ^{160}Re at 184 keV reported in 2011Da01 (^{160}Re IT decay dataset).

[x] γ ray not placed in level scheme.

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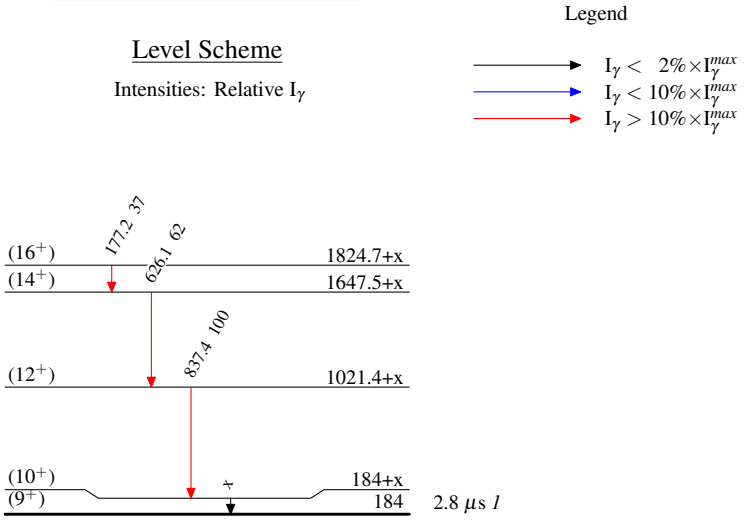
Level Scheme

Intensities: Relative I_γ



$^{160}_{75}Re_{85}$

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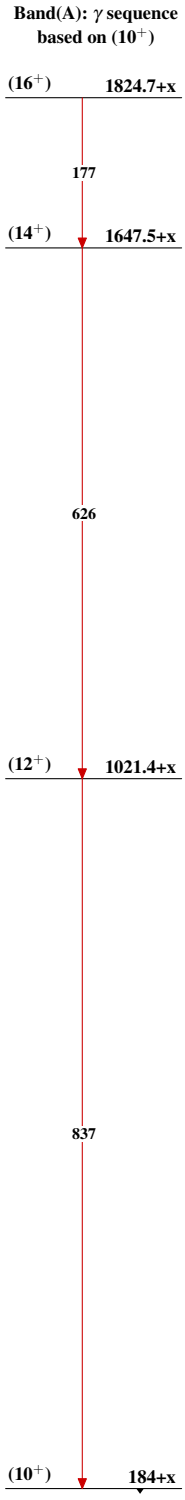

$^{160}_{75}Re_{85}$