^{112}Sn(^{40}Ar,p2nγ) 2010Ko12

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 185, 2 (2022)	23-Aug-2022

Includes ^{114}Sn(^{40}Ar,4npγ).

2010Ko12: E=200, 206 MeV ^{40}Ar beams were produced from the Heavy Ion Laboratory cyclotron of University of Warsaw. Target was metallic ^{112}Sn (92% enriched) and ^{114}Sn (86% enriched). γ rays were detected with the OSIRIS-II array consisting of 12 Compton-suppressed HPGe detectors. Measured Eγ, Iγ, $\gamma\gamma$-coin, $\gamma(\theta)$, prompt and delayed γ in the in-beam and beam-off modes. Deduced levels, J^π, band structures, γ-ray multipolarities. Comparison with shell-model calculations.

^{149}Ho Levels

E(level)†	J$^\pi$&	E(level)†	J$^\pi$&	E(level)†	J$^\pi$&	E(level)†	J$^\pi$&
0.0[a]	(11/2$^-$)	2406.6[#b] 4	(23/2$^+$)	4028.6[c] 7	(33/2,35/2)	5210.3 7	(35/2$^-$)
1379.1[#b] 3	(15/2$^+$)	2591.6[‡a] 4	(23/2$^-$)	4330.0[@d] 8	(35/2,37/2)	5505.3[c] 8	(39/2,41/2)
1559.8[‡a] 3	(15/2$^-$)	2735.4[‡a] 5	(27/2$^-$)	4679.7 6	(31/2$^-$)		
2023.4[#b] 4	(19/2$^+$)	2848.6[c] 6	(29/2,31/2)	4764.7[@d] 8	(39/2,41/2)		
2285.6[‡a] 4	(19/2$^-$)	3930.6[@d] 7	(31/2,33/2)	4820.3[c] 8	(37/2,39/2)		

† From a least-squares fit to γ-ray energies, assuming $\Delta E\gamma$=0.3 keV.

‡ Member of configuration=$\pi h^3_{11/2}$.

Member of configuration=$\pi h^3_{11/2}\otimes\pi h_{11/2}\otimes\nu g^{-1}_{7/2}$.

@ Member of configuration=$\pi h^3_{11/2}\otimes\pi(h_{11/2},d^{-1}_{5/2})$, if the sequence is 33/2$^+$, 37/2$^+$, 41/2$^+$, ..

& Proposed by 2010Ko12, based on measured anisotropies, band assignments, and shell-model predictions.

a Band(A): Band based on g.s.

b Band(B): Band based on (15/2$^+$).

c Band(C): Band based on (29/2,31/2).

d Band(D): Band based on (31/2,33/2).

γ(^{149}Ho)

Anisotropy ratio R=W(25°)/W(90°), with mean uncertainty of R not exceeding 15%. The expected values are: 1.4 for the ΔJ=2, quadrupole transition, and 0.8 for ΔJ=1, dipole.

E$_\gamma$†	I$_\gamma$†	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.‡	Comments
113.2	36 4	2848.6	(29/2,31/2)	2735.4	(27/2$^-$)		R=1 (isotropic).
143.8	62 7	2735.4	(27/2$^-$)	2591.6	(23/2$^-$)		R=1 (isotropic).
185.0	18 5	2591.6	(23/2$^-$)	2406.6	(23/2$^+$)		R=1 (isotropic).
306.0	65 7	2591.6	(23/2$^-$)	2285.6	(19/2$^-$)		R=1 (isotropic).
383.1	25 5	2406.6	(23/2$^+$)	2023.4	(19/2$^+$)		R=1 (isotropic).
399.4	16.2 17	4330.0	(35/2,37/2)	3930.6	(31/2,33/2)	Q	R=1.30. E2 in 2010Ko12.
434.7	27 3	4764.7	(39/2,41/2)	4330.0	(35/2,37/2)	Q	R=1.20. E2 in 2010Ko12.
530.6	24.2 25	5210.3	(35/2$^-$)	4679.7	(31/2$^-$)	Q	R=1.45. E2 in 2010Ko12.
644.3	30 5	2023.4	(19/2$^+$)	1379.1	(15/2$^+$)		R=1 (isotropic).
685.0	48 5	5505.3	(39/2,41/2)	4820.3	(37/2,39/2)	D	R=0.85.
725.8	100 10	2285.6	(19/2$^-$)	1559.8	(15/2$^-$)		R=1 (isotropic).
791.7	45 5	4820.3	(37/2,39/2)	4028.6	(33/2,35/2)	Q	R=1.45. E2 in 2010Ko12.

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^{112}Sn(^{40}Ar,p2nγ) 2010Ko12 (continued)

γ(^{149}Ho) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
1082.0	39 *4*	3930.6	(31/2,33/2)	2848.6	(29/2,31/2)	D	R=0.80.
1180.0	67 *7*	4028.6	(33/2,35/2)	2848.6	(29/2,31/2)	Q	R=1.16. E2 in 2010Ko12.
1379.1	43 *5*	1379.1	(15/2$^+$)	0.0	(11/2$^-$)		R=1 (isotropic).
1559.8	109 *11*	1559.8	(15/2$^-$)	0.0	(11/2$^-$)		R=1 (isotropic).
1944.3	38 *4*	4679.7	(31/2$^-$)	2735.4	(27/2$^-$)	Q	R=1.45. E2 in 2010Ko12.

[†] From 2010Ko12, at E(^{40}Ar)=206 MeV.

[‡] From 2010Ko12 based on measured anisotropy ratios. For $\Delta J=2$ transitions, Q instead of E2 quoted in 2010Ko12 are adopted here by the evaluators, since electric or magnetic nature of a transition cannot be determined from anisotropy.

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Level Scheme

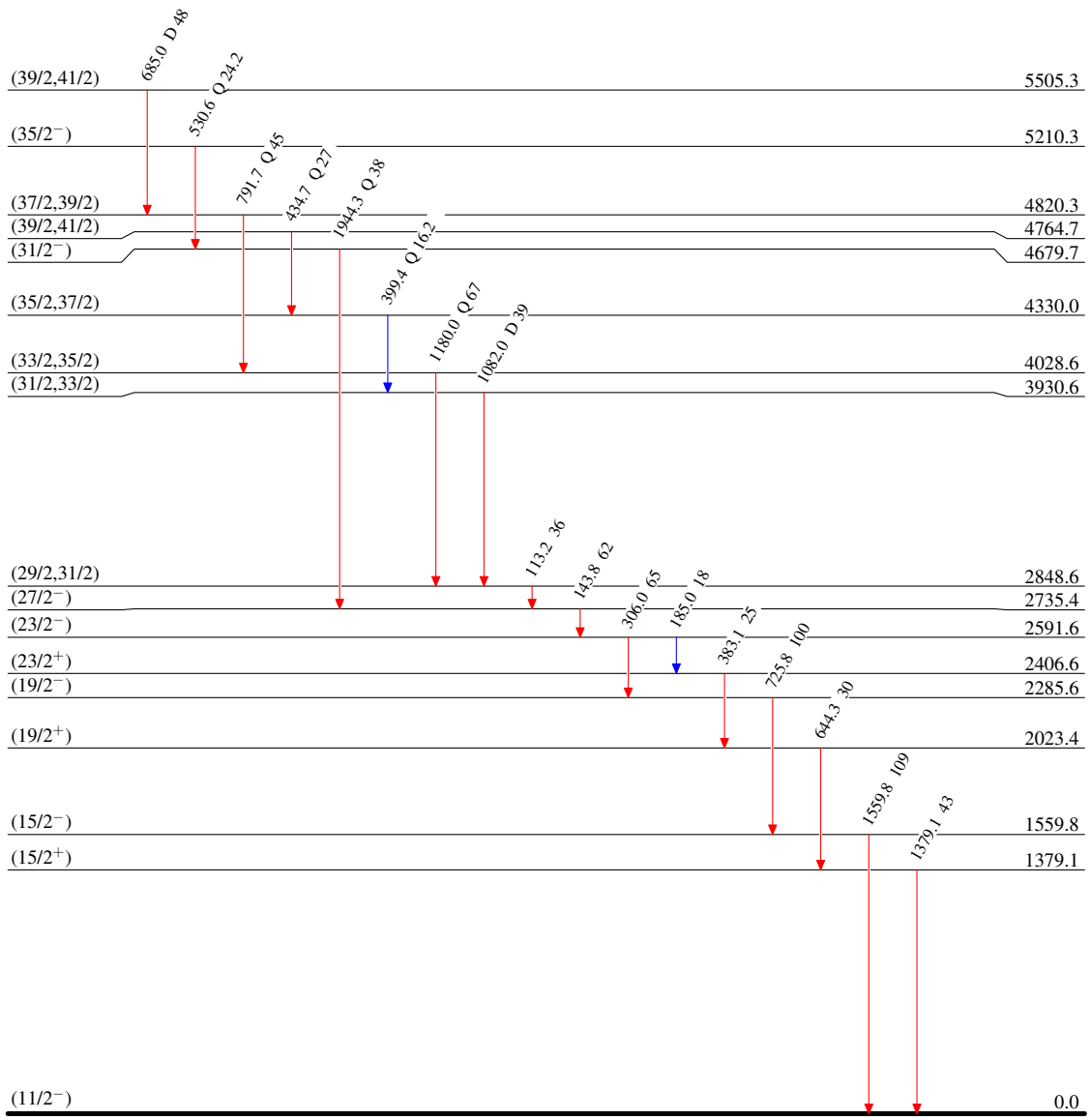
Intensities: Relative I_γ

Legend

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

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

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



$^{149}_{67}Ho_{82}$

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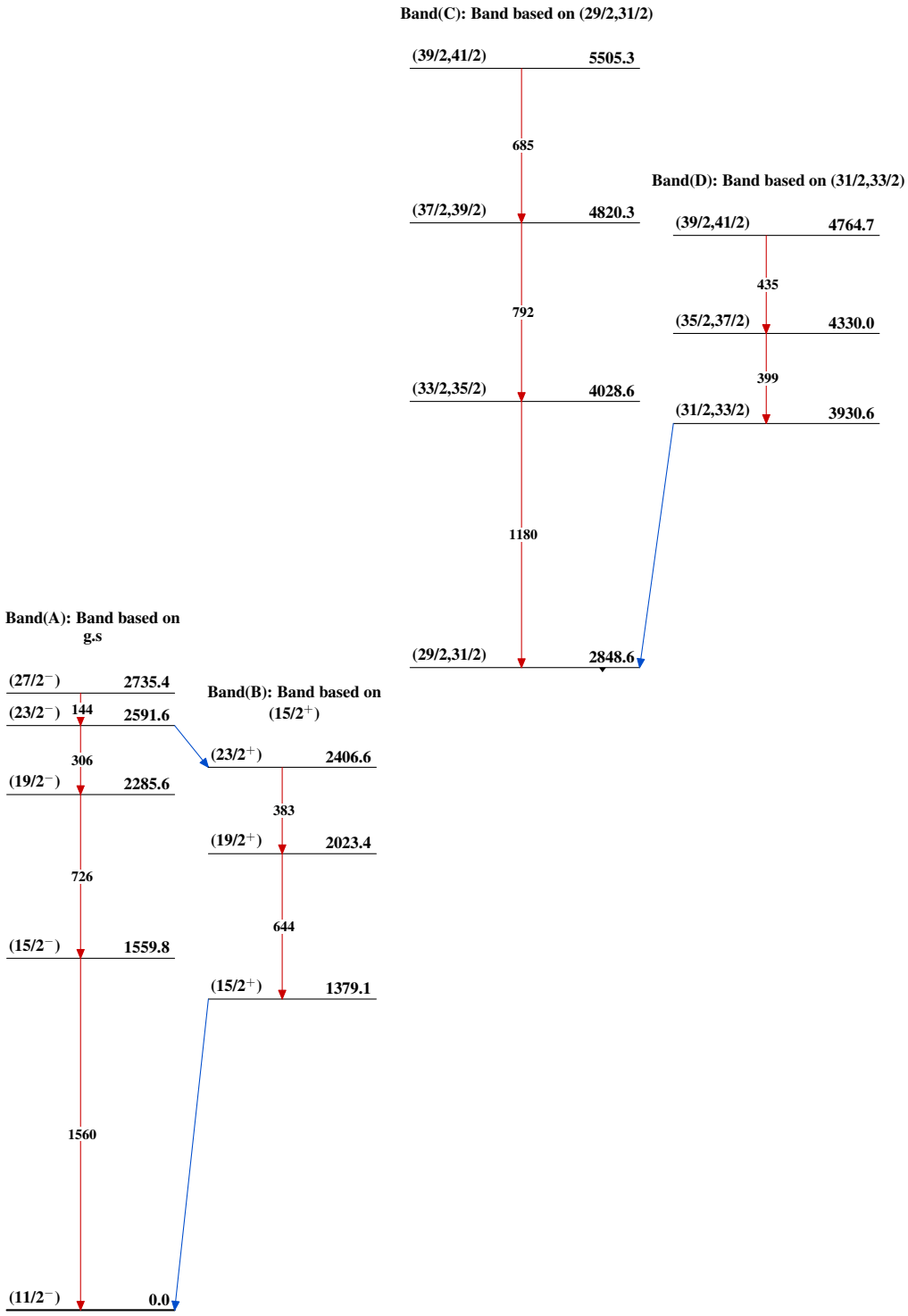

$^{149}_{67}Ho_{82}$