(HI,xnγ) 2006Jo04,2005Jo18,1998Ki20

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. M. Baglin[1], E. A. Mccutchan[2], S. Basunia[1]	NDS 153, 1 (2018)	1-Oct-2018

This data set includes ^{112}Sn(^{63}Cu,p4nγ), ^{112}Sn(^{60}Ni,2nγ), ^{96}Mo(^{78}Kr,3nγ) and ^{96}Ru(^{78}Kr,2p2nγ).

2006Jo04: ^{112}Sn(^{60}Ni,2nγ), E=266 MeV; 93%-enriched ^{112}Sn target; prompt γ-rays detected At target by JUROGAM spectrometer (43 EUROGAM type escape-suppressed Ge detectors at 158°, 134°, 108°, 94°, 86°, 72°); recoils separated by the RITU recoil separator and deposited into the GREAT spectrometer (Si and Ge detectors and multiwire proportional counter) at its focal plane; events time-stamped with 10 ns precision; measured Eγ, Iγ, recoil-x-γ coin, γγ coin; γ spectra correlated with subsequent ^{170}Pt 6550α. See also 2005Jo18.

1998Ki20: ^{112}Sn(^{63}Cu,p4nγ), E=338 MeV; ^{112}Sn(^{60}Ni,2nγ), E=266 MeV; 93.2% ^{112}Sn target; gas-filled recoil separator, Si strip detector in focal plane; JUROSPHERE γ detector array (17 Compton-suppressed Ge detectors); measured Eγ, Iγ from recoil-gated α-tagged γ spectrum, γγ coin, Iγ(157.6°)/Iγ(79° and 101°).

1998Se20: ^{96}Mo(^{78}Kr,3nγ), E(^{78}Kr)=345 MeV, enriched ^{96}Mo target; ^{96}Ru(^{78}Kr,2p2nγ), E(^{78}Kr)=385 MeV, enriched ^{96}Ru target; recoil α-decay tagging method; 10 Compton-suppressed HPGe detector array, recoil fragment mass analyzer with double-sided Si strip detector behind focal plane; measured Eγ, Eα.

1997Ju04: ^{112}Sn(^{63}Cu,p4nγ), E=338 MeV; gas-filled recoil separator, Si strip detector in focal plane; JUROSPHERE γ detector array (20 Compton-suppressed Ge detectors); measured recoil-gated α-tagged γ spectrum.

^{170}Pt Levels

E(level)[†]	Jπ[‡]	Comments
0[#]	0^+	
509.20[#] *20*	2^+	
1171.90[#] *23*	4^+	
1514.1[@] *8*	(3^-)	
1898.3[@] *4*	$5^{(-)}$	
1912.31[#] *25*	6^+	
1972.5? *7*		
2111.5[@] *4*	$7^{(-)}$	
2436.8[#] *4*	8^+	
2443.7? *5*		
2495.5[@] *11*	(9^-)	
2501.3? *11*		
2509.6? *7*		
2629.0? *5*		
3025.2[#] *4*	(10^+)	Jπ: The 10^+ member of the g.s. band is either the 3025 or the 3038 level; 2006Jo04 assign 10^+ to 3025 in level scheme figure 1 and in the text, but assign 10^+ to 3038 in table I. 2005Jo18 assigned 10^+ to 3038 level.
3038.2 *5*	(10^+)	Jπ: see comment on 3025 level.
3067.3?[@] *11*		
3121.5? *12*		
3708.2?[@] *11*		

[†] From least-squares fit to Eγ.

[‡] From 2006Jo14. The three strongest γ-rays form a cascade of stretched Q transitions, and the energy of the strongest agrees closely with that expected for the first 2^+ state (based on the energy systematics for first excited states of even-A Pt isotopes from ^{172}Pt to ^{190}Pt (see, e.g., fig. 4 of 1998Se20)). This supports their association with the first three excited states of the g.s. band of ^{170}Pt.

[#] Band(A): $K^\pi=0^+$ g.s. Band. Weakly-deformed; possibly crossed by a deformed intruder configuration At J≈8ħ (2006Jo04).

[@] Band(B): Sequence on (3^-) 1514.

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γ(^{170}Pt)

E_γ [†]	I_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	Comments
185.3[#] *1*	9 *3*	2629.0?		2443.7?			R=0.88 *26*.
213.2 *1*	11 *3*	2111.5	$7^{(-)}$	1898.3	$5^{(-)}$	Q	R=1.20 *23*. other Eγ (Iγ): 213.5 (16 *1*) for unplaced γ (1998Ki20).
[x]254.7 *3*	8 *3*						
384.0 *10*	4 *1*	2495.5	(9^-)	2111.5	$7^{(-)}$		R=1.46 *14* for 384.0γ+384.4γ (2006Jo04).
384.4 *10*	23 *10*	1898.3	$5^{(-)}$	1514.1	(3^-)		R=1.46 *14* for 384.0γ+384.4γ (2006Jo04). other Eγ (Iγ): 385.0 (26 *2*) for unplaced γ (1998Ki20).
[x]449.8 *2*	4 *1*						
509.2 *2*	100 *8*	509.20	2^+	0	0^+	Q	R=1.14 *6* (2006Jo04). Iγ(157.6°)/Iγ(79° and 101°)=1.06 *12* (1998Ki20). Other Eγ: 510 keV (1997Ju04), 508 keV (1998Se20); 508.9 (Iγ=100 *5*) (1998Ki20); authors do not state the uncertainty in Eγ.
524.5 *2*	27 *6*	2436.8	8^+	1912.31	6^+	Q	R=1.32 *13*. other Eγ (Iγ): 524.0 (32 *3*) for unplaced γ (1998Ki20).
537.1[#] *1*	17 *4*	2509.6?		1972.5?			other Eγ (Iγ): 536.4 (21 *4*) for unplaced γ (1998Ki20).
545.4[#] *2*	14 *5*	2443.7?		1898.3	$5^{(-)}$		other Eγ (Iγ): 545.0 (14 *4*) for unplaced γ (1998Ki20).
571.8[#] *2*	16 *6*	3067.3?		2495.5	(9^-)		other Eγ (Iγ): 572.5 (13 *3*) for unplaced γ (1998Ki20).
588.4 *2*	21 *5*	3025.2	(10^+)	2436.8	8^+		other Eγ (Iγ): 588.3 (19 *3*) for unplaced γ (1998Ki20).
601.4 *3*	16 *7*	3038.2	(10^+)	2436.8	8^+		other Eγ (Iγ): 600.5 (26 *6*) for unplaced γ (1998Ki20).
603.0[#] *10*	19 *9*	2501.3?		1898.3	$5^{(-)}$		
620.2[#] *4*	13 *8*	3121.5?		2501.3?			
640.9[#] *2*	9 *4*	3708.2?		3067.3?			
662.7 *1*	90 *10*	1171.90	4^+	509.20	2^+	Q	R=1.22 *9* (2006Jo04). other data: Eγ=662.3, Iγ=86 *6*; Iγ(157.6°)/Iγ(79° and 101°)=1.20 *14* (1998Ki20).
[x]670.3 *2*	12 *7*						
726.4 *3*	31 *7*	1898.3	$5^{(-)}$	1171.90	4^+	D	R=0.89 *11* (2006Jo04). other data: Eγ=725.9, Iγ=30 *3* (1998Ki20) for unplaced γ.
740.4 *1*	60 *11*	1912.31	6^+	1171.90	4^+		R=1.03 *14* (2006Jo04). other data: Eγ=739.5, Iγ=49 *7*; Iγ(157.6°)/Iγ(79° and 101°)=0.88 *17* (1998Ki20).
[x]748.5 *4*	10 *5*						
800.6[#] *6*	20 *10*	1972.5?		1171.90	4^+		
1005.0 *10*	33 *18*	1514.1	(3^-)	509.20	2^+		

[†] From 2006Jo04 for the ^{112}Sn(^{60}Ni,2nγ), E=266 MeV reaction; data from 1998Ki20 for the same reaction At the same bombarding energy are given In comments; they are In satisfactory agreement with data from 2006Jo04.

[‡] Based on angular distribution ratio R (2006Jo04) where R=Iγ(158°)/[Iγ(86°)+ Iγ(94°)]. R=1.32 *5* and 0.86 *2* for known ΔJ=2 443γ and ΔJ=1 947γ In ^{170}Os, respectively. Supported by Iγ(157.6°)/Iγ(79° and 101°) values from 1998Ki20 which are consistent with value expected for stretched Q transition for several transitions (As indicated In comments).

[#] Placement of transition in the level scheme is uncertain.

[x] γ ray not placed in level scheme.

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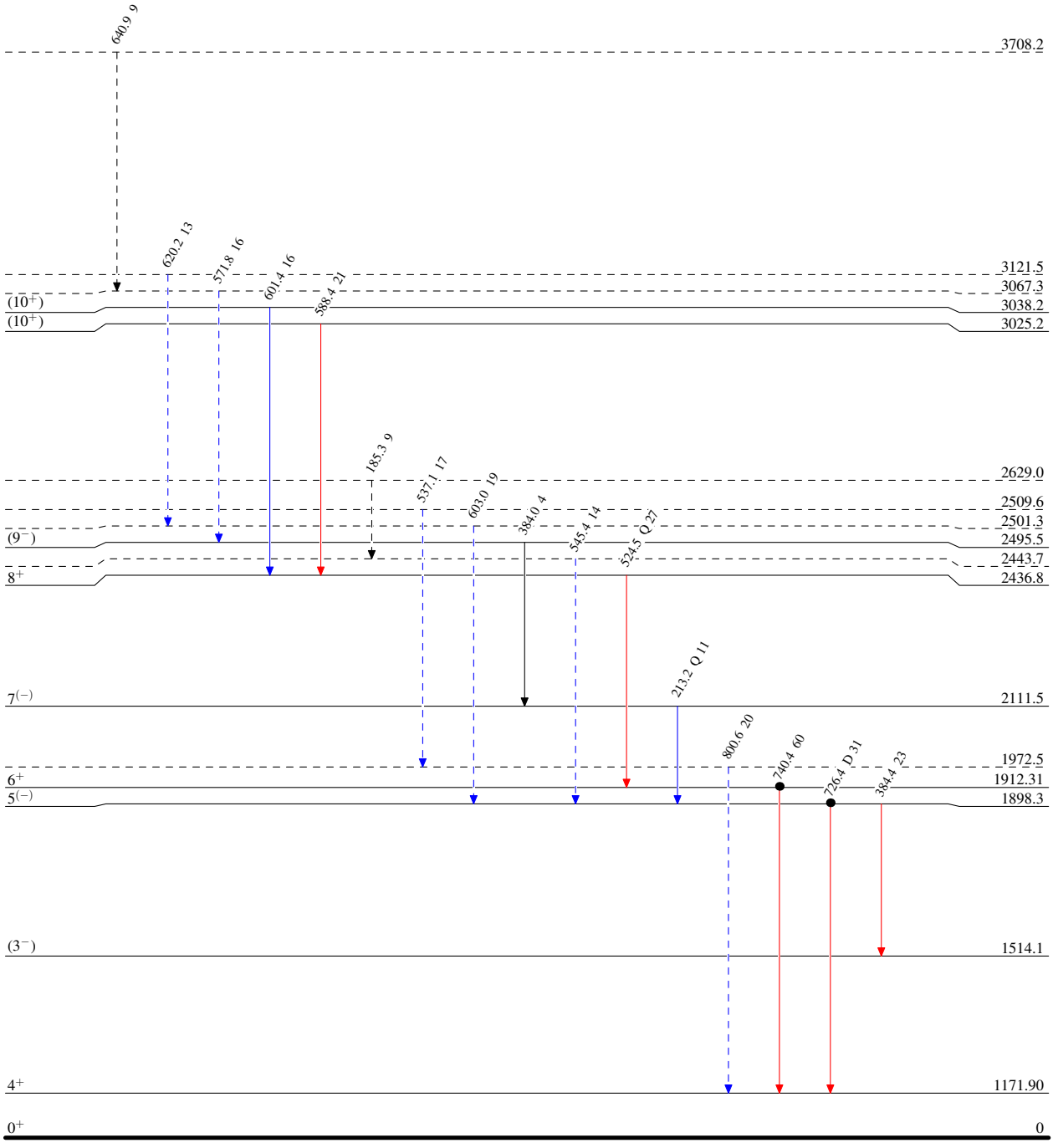
Level Scheme

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)
- Coincidence



$^{170}_{78}Pt_{92}$

(HI,xnγ) 2006Jo04,2005Jo18,1998Ki20

Level Scheme (continued)

Intensities: Relative I_γ

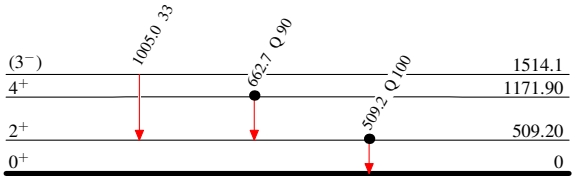
Legend

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

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

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

Coincidence



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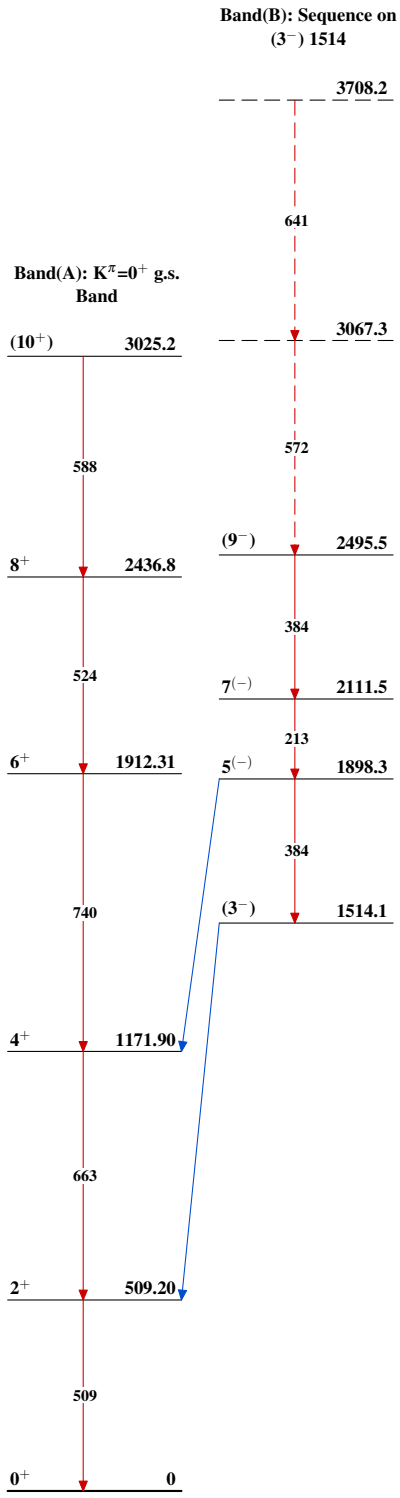

$^{170}_{78}Pt_{92}$