^{112}Sn(^{58}Ni,2pnγ) 2001Jo11

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 191,1 (2023)	22-Aug-2023

2001Jo11: E=266 MeV ^{58}Ni beam was produced from the JYFL K130 cyclotron. Target was 500 μg/cm^2 self-supporting ^{112}Sn. Measured Eγ, Iγ, $\gamma\gamma$, (recoil)γ-coin and $\gamma\gamma(\theta)$ using JUROSPHERE spectrometer array comprised of 13 EUROGAM-I type escape-suppressed spectrometers and 12 TESSA type escape-suppressed spectrometers. The gamma-ray array was used in conjunction with RITU gas-filled recoil separator at the cyclotron facility of the University of Jyvaskyla. Deduced levels, J, π, band structures. Comparisons with theoretical calculations.

^{167}Os Levels

Quasiparticle labels are as follows (2001Jo11):
A: $\nu i_{13/2}$, α=+1/2.
B: $\nu i_{13/2}$, α=−1/2.
E: $\nu h_{9/2}/f_{7/2}$, α=+1/2.
F: $\nu h_{9/2}/f_{7/2}$, α=−1/2.

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	Comments
434.7[#] *8*	(13/2$^+$)	700 ns *10*	Additional information 1. E(level),J$^\pi$,T$_{1/2}$: from Adopted Levels, with data adopted from 2010Sc02 in ^{167}Os IT decay.
797.5[#] *8*	(17/2$^+$)		
1340.3[#] *9*	(21/2$^+$)		
1995.4[#] *9*	(25/2$^+$)		
2147.2[@] *9*	(21/2$^-$)		J$^\pi$: (23/2$^-$) in the Adopted Levels.
2329.1[&] *9*	(23/2$^-$)		
2627.0[@] *9*	(25/2$^-$)		J$^\pi$: (27/2$^-$) in the Adopted Levels.
2678.8[#] *9*	(29/2$^+$)		
2816.7[&] *10*	(27/2$^-$)		

[†] From a least-squares fit to γ-ray energies. The (13/2$^+$) base level given as 0+x in 2001Jo11 has been resolved to be at E=434.7 by 2010Sc02 in ^{167}Os IT decay, which is adopted in the Adopted Levels.
[‡] As proposed by 2001Jo11 based on band structures and angular asymmetry ratios for selected γ rays, unless otherwise stated.
[#] Band(A): $\nu i_{13/2}$,α=+1/2 band.
[@] Band(B): EAB band.
[&] Band(b): FAB band.

γ(^{167}Os)

Angular asymmetry intensity ratio R(θ)=Iγ(157°)/Iγ(79°+101°) from 2001Jo11 is given under comments and typical values are 0.89 *12* for stretched quadrupole and 0.42 *10* for stretched dipole transitions (2001Jo11).

E$_\gamma$[†]	I$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[‡]	Comments
362.8 *2*	100.0 *20*	797.5	(17/2$^+$)	434.7	(13/2$^+$)	Q	R(θ)=0.93 *7*.
479.8 *3*	5.6 *8*	2627.0	(25/2$^-$)	2147.2	(21/2$^-$)		
487.6 *3*	4.6 *6*	2816.7	(27/2$^-$)	2329.1	(23/2$^-$)		
542.8 *2*	53.0 *20*	1340.3	(21/2$^+$)	797.5	(17/2$^+$)	Q	R(θ)=0.99 *8*.
631.5 *3*	3.1 *8*	2627.0	(25/2$^-$)	1995.4	(25/2$^+$)		

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$\gamma(^{167}Os)$ (continued)

E_γ [†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	Comments
655.1 *2*	25.1 *19*	1995.4	(25/2$^+$)	1340.3	(21/2$^+$)	Q	R(θ)=0.88 *11*.
683.4 *3*	8.6 *18*	2678.8	(29/2$^+$)	1995.4	(25/2$^+$)		
807.0 *3*	5.3 *19*	2147.2	(21/2$^-$)	1340.3	(21/2$^+$)		
988.8 *3*	4.1 *9*	2329.1	(23/2$^-$)	1340.3	(21/2$^+$)		

† $\Delta(E\gamma)$=0.2 keV for Iγ>20, 0.3 keV for 2<Iγ<20, and 0.5 keV Iγ<2 based on a general comment by 2001Jo11.

‡ Assigned by the evaluators from angular distribution ratios from 2001Jo11 as given under comments, with RUL used for 362.9γ; not listed 2001Jo11.

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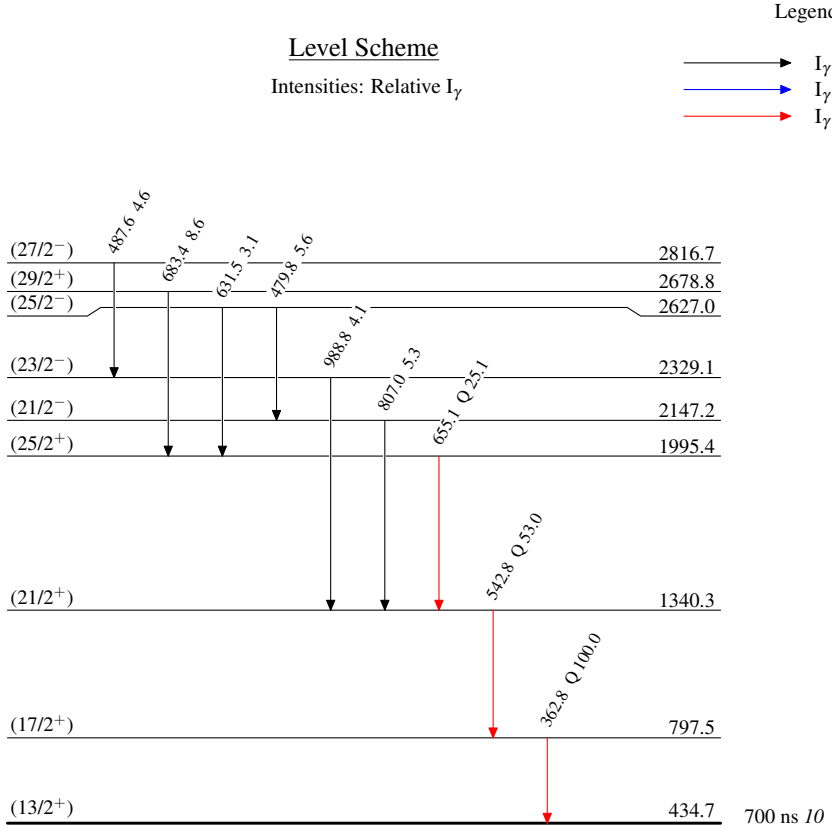
Level Scheme

Intensities: Relative I_γ



$^{167}_{76}Os_{91}$

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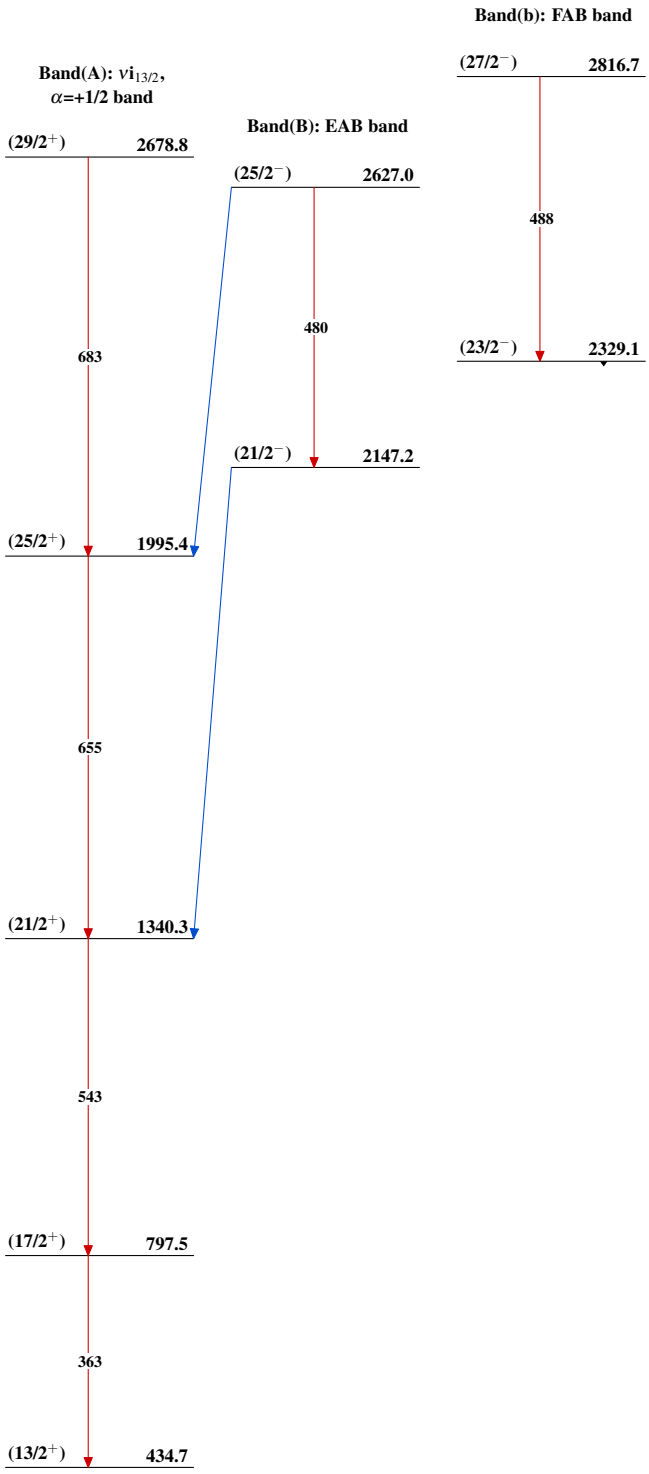

$^{167}_{76}Os_{91}$