^{58}Ni(^{58}Ni,2p2nγ) 2001Sm13

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. Lalkovski, F. G. Kondev	NDS 124, 157 (2015)	1-Aug-2014

Facility: 88-inch cyclotron at LBNL; Beam: E(^{58}Ni)=250 MeV; Target: two, stacked, 500−μg/cm^2 thick, self-supporting ^{58}Ni foils; Detectors: GAMMASPHERE consisting of 83 HPGe detectors, MICROBALL array comprising 95 CsI(Tl) detectors for charged particles and Manchester-Pennsylvania array of 15 NE213 neutron detectors; Measured: γ-γ-γ, $\gamma(\theta)$, pγ, nγ, Eγ, Iγ, n-tof; Deduced: ^{112}Ce level scheme; Other: 1998SmZY from the same collaboration.

^{112}Xe Levels

E(level)†	J$^\pi$‡	E(level)†	J$^\pi$‡	E(level)†	J$^\pi$‡
0#	0$^+$	1906.9# *4*	6$^+$	3189.1@ *7*	(9$^-$)
466.00# *20*	2$^+$	2021.9@ *4*	(5$^-$)	3549.6# *5*	10$^+$
1122.1# *3*	4$^+$	2594.1@ *4*	(7$^-$)	3852.3@ *8*	(11$^-$)
1649.5?@ *5*	(3$^-$)	2777.5# *4*	8$^+$	4447.3?@ *10*	(13$^-$)
				4469.1# *5*	12$^+$

† From a least-squares fit to Eγ.
‡ From the deduced γ-ray multipolarities, the observed apparent band structures and systematics in neighbouring nuclei in 2001Sm13.
# Band(A): K$^\pi$=0$^+$, ground-state band.
@ Band(B): ΔJ=2 negative-parity band.

γ(^{112}Xe)

E$_\gamma$†	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.‡	Comments
372.0 *6*	2021.9	(5$^-$)	1649.5?	(3$^-$)		
466.0 *2*	466.00	2$^+$	0	0$^+$		
572.2 *2*	2594.1	(7$^-$)	2021.9	(5$^-$)	E2	Mult.: R$_{DCO}$=1.3 *2* (2001Sm13).
595.0 *6*	3189.1	(9$^-$)	2594.1	(7$^-$)		
595# *1*	4447.3?	(13$^-$)	3852.3	(11$^-$)		
656.1 *2*	1122.1	4$^+$	466.00	2$^+$	E2	Mult.: R$_{DCO}$=1.33 *15* (2001Sm13).
663.2 *2*	3852.3	(11$^-$)	3189.1	(9$^-$)		
687.1 *2*	2594.1	(7$^-$)	1906.9	6$^+$		
x722 *1*						Eγ: observed in coincidence with 466.0γ, 656.1γ and 784.8γ, but not placed in the level scheme by the authors (2001Sm13).
772.1 *2*	3549.6	10$^+$	2777.5	8$^+$		
784.8 *2*	1906.9	6$^+$	1122.1	4$^+$	E2	Mult.: R$_{DCO}$=1.3 *2* (2001Sm13).
x818 *1*						Eγ: observed in coincidence with the 595.0γ and 900.0γ, but not placed in the level scheme by the authors (2001Sm13).
870.6 *2*	2777.5	8$^+$	1906.9	6$^+$	E2	Mult.: R$_{DCO}$=1.24 *15* (2001Sm13).
900.0 *2*	2021.9	(5$^-$)	1122.1	4$^+$	(E1)	Mult.: R$_{DCO}$=0.88 *13* (2001Sm13).
919.5 *2*	4469.1	12$^+$	3549.6	10$^+$		
x964 *1*						Eγ: observed in coincidence with 466.0γ and 572.2γ, but not placed in the level scheme by the authors (2001Sm13).
1183.0 *6*	1649.5?	(3$^-$)	466.00	2$^+$		

† From 2001Sm13.
‡ From the measured asymmetry ratio R$_{DCO}$=Iγ(30°or150°)/Iγ(90°) in 2001Sm13. A value of R$_{DCO}$≈1.0 would be expected for a stretched-dipole transition and≈1.4 for a stretched-quadruple transition. Those were confirmed for known ΔJ=1 333γ

Continued on next page (footnotes at end of table)

^{58}Ni(^{58}Ni,2p2nγ) 2001Sm13 (continued)

γ(^{112}Xe) (continued)

(R_{DCO}=0.97 *7*) and ΔJ=2 642γ (R_{DCO}=1.33 *10*) in ^{112}I, observed in the same experiment (2001Sm13).

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

[x] γ ray not placed in level scheme.

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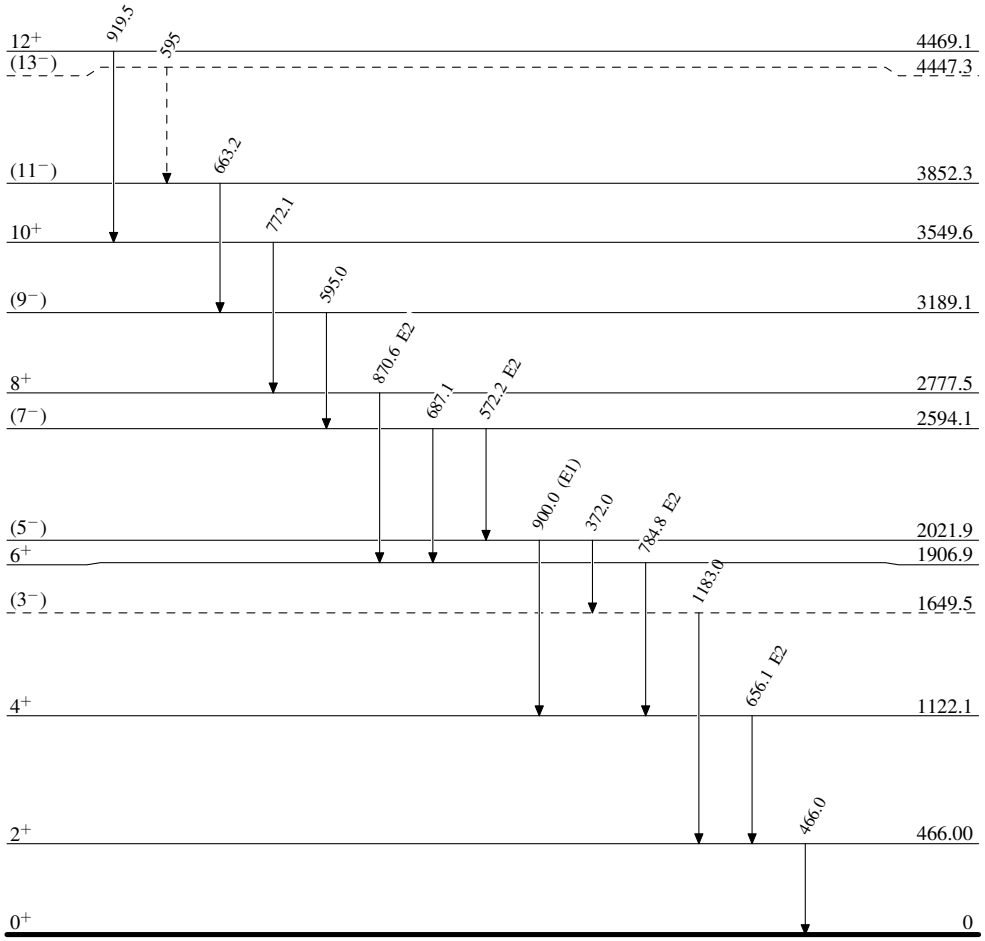
Legend

Level Scheme

γ Decay (Uncertain)



$^{112}_{54}Xe_{58}$

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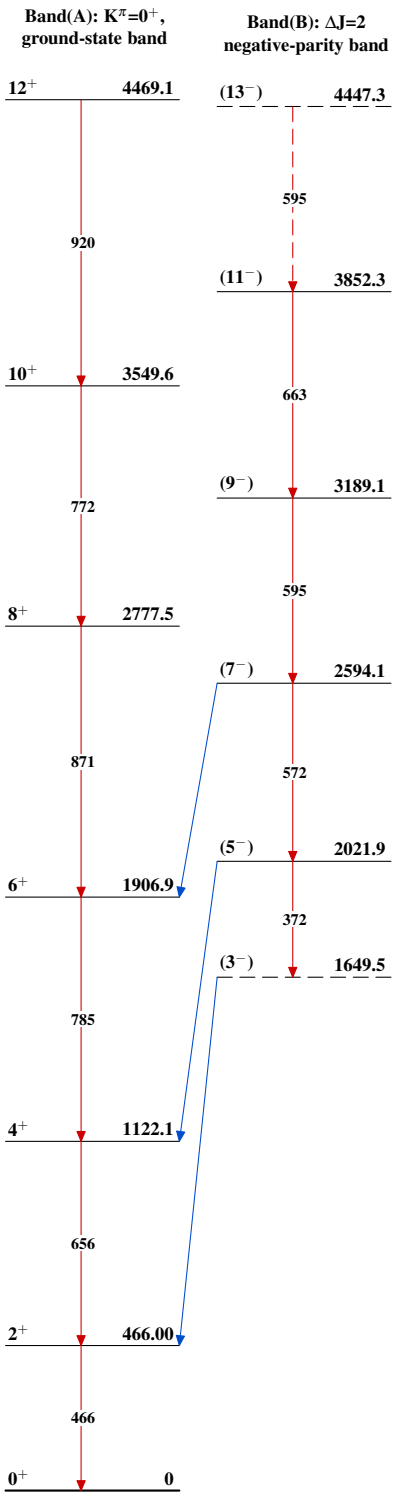

$^{112}_{54}Xe_{58}$