$^{51}V(^{58}Ni,2p2n\gamma)$ 1992Is02,1995Is06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. Lalkovski, J. Timar and Z. Elekes	NDS 161, 1 (2019)	1-Apr-2019

Includes $^{56}Fe(^{54}Fe,3p2n)$ reaction data.

Facility: Japan Atomic Energy Research Institute's Tandem accelerator; Beam: E(^{58}Ni)=27 MeV; Target: 6.1 mg/cm^2 enriched to 99.8% in ^{51}V; Detectors: 4π Si box consisting of 10 Si surface barrier detectors, four HPGe, planar Ge, plunger; Measured: c.p.-γ, γ, γ-γ coinc., Eγ, Iγ, linear polarisation, angular distribution; Deduced: level scheme,γ-ray Mult., J^π, $T_{1/2}$.

^{105}In Levels

E(level)[†]	J^π	$T_{1/2}$[‡]	Comments
0.0[#]	9/2$^+$		
992.0 *9*	11/2$^+$		
1342.0[#] *9*	13/2$^+$		
1827.0[#] *13*	17/2$^+$	0.33 ns *10*	
2099.0[#] *17*	19/2$^+$	4 ps *2*	
2230.1 *19*	21/2$^+$		E(level): due to reversed ordering of 1730-131 cascade in later studies (1997Ko51,1999De50), this level is non-existent, instead the level is defined at 3829.
2939.3[#] *18*	21/2$^+$		
3346.7[#] *19*	23/2$^+$		
3632.7[#] *21*	25/2$^+$		
3960.2[@] *19*	23/2$^-$		
4358.2[@] *22*	25/2$^-$		
5048.2[@] *24*	27/2$^-$		
5450[@] *3*	29/2$^-$		
5892[@] *3*	31/2$^-$		

[†] From a least-squares fit to Eγ's. Δ(Eγ)=1 keV assumed by the evaluators.
[‡] From RDDS in 1992Is02, and 1995Is06.
[#] Band(A): γ sequence based on g.s..
[@] Band(B): γ sequence based on 23/2$^-$.

$\gamma(^{105}In)$

E$_\gamma$	I$_\gamma$	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.[†]	Comments
131[@]	15[&] *4*	2230.1	21/2$^+$	2099.0	19/2$^+$		
272	90 *5*	2099.0	19/2$^+$	1827.0	17/2$^+$	M1	Mult.: pol>1. Mult.: A_2=−0.23 *2*; A_4=0.06 *4*.
286	18 *2*	3632.7	25/2$^+$	3346.7	23/2$^+$	M1	Mult.: pol>1. Mult.: A_2=−0.29 *3*; A_4=0.14 *7*.
350	42 *2*	1342.0	13/2$^+$	992.0	11/2$^+$	M1	Mult.: pol>1. Mult.: A_2=−0.21 *3*; A_4=0.10 *7*.
398	43 *4*	4358.2	25/2$^-$	3960.2	23/2$^-$	(M1)	
402[‡#]	26 *10*	5450	29/2$^-$	5048.2	27/2$^-$		
407	18[&] *5*	3346.7	23/2$^+$	2939.3	21/2$^+$		
442[‡#]	23 *9*	5892	31/2$^-$	5450	29/2$^-$		
485	139 *14*	1827.0	17/2$^+$	1342.0	13/2$^+$	E2	Mult.: pol<1. Mult.: A_2=0.26 *1*; A_4=−0.15 *3*.
690[‡]	28 *4*	5048.2	27/2$^-$	4358.2	25/2$^-$		

Continued on next page (footnotes at end of table)

$^{51}V(^{58}Ni,2p2n\gamma)$ 1992Is02,1995Is06 (continued)

$\gamma(^{105}In)$ (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	δ	Comments
840	43 *13*	2939.3	$21/2^+$	2099.0	$19/2^+$	M1+E2		E_γ: the γ-ray peak was contaminated by the 8^+ to 6^+ transition in ^{104}Cd. Iγ, A_2 and A_4 values were obtained by subtraction of the component of ^{104}Cd, assuming that γ in ^{104}Cd shows $\gamma(\theta)$ with A_2=+0.28 and A_4=−0.08. Mult.: pol>1. A_2=−0.04 *8*; A_4=0.05 *12*.
992	46 *3*	992.0	$11/2^+$	0.0	$9/2^+$	M1+E2	0.5 *1*	Mult.: pol>1. Mult.: A_2=0.21 *3*; A_4=−0.01 *7*. δ: from $\gamma(\theta)$ and γ(lin pol).
1021	24 *2*	3960.2	$23/2^-$	2939.3	$21/2^+$	E1		Mult.: pol<1. Mult.: A_2=−0.27 *3*; A_4=0.08 *7*.
1248	15 *2*	3346.7	$23/2^+$	2099.0	$19/2^+$	E2		Mult.: pol<1. Mult.: A_2=0.27 *8*; A_4=0.03 *12* (E2).
1342	100	1342.0	$13/2^+$	0.0	$9/2^+$	E2		Mult.: pol<1. Mult.: A_2=0.28 *2*; A_4=−0.08 *7*.
1730[@]	15 *2*	3960.2	$23/2^-$	2230.1	$21/2^+$	E1		Mult.: pol ≈1. Mult.: A_2=−0.29 *5*; A_4=−0.07 *9*.

[†] From $\gamma(\theta)$ and γ(lin pol). Polarization anisotropy is defined as n(parallel)/n(perpendicular); and values are plotted in figure 3 of 1992Is02.

[‡] Angular distribution coefficients could not be deduced because of Doppler broadening of the γ-ray.

[#] The ordering of the 442-402 cascade is reversed in later works (1997Ko51,1999De50).

[@] The ordering of the 1730-131 cascade is reversed in later works (1997Ko51,1999De50).

[&] The γ-ray was a doublet in the (charged particle)γ coin spectrum with multiplicity of 2. The intensity was estimated from the (charged particle)$\gamma\gamma$ coin spectrum.

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Level Scheme

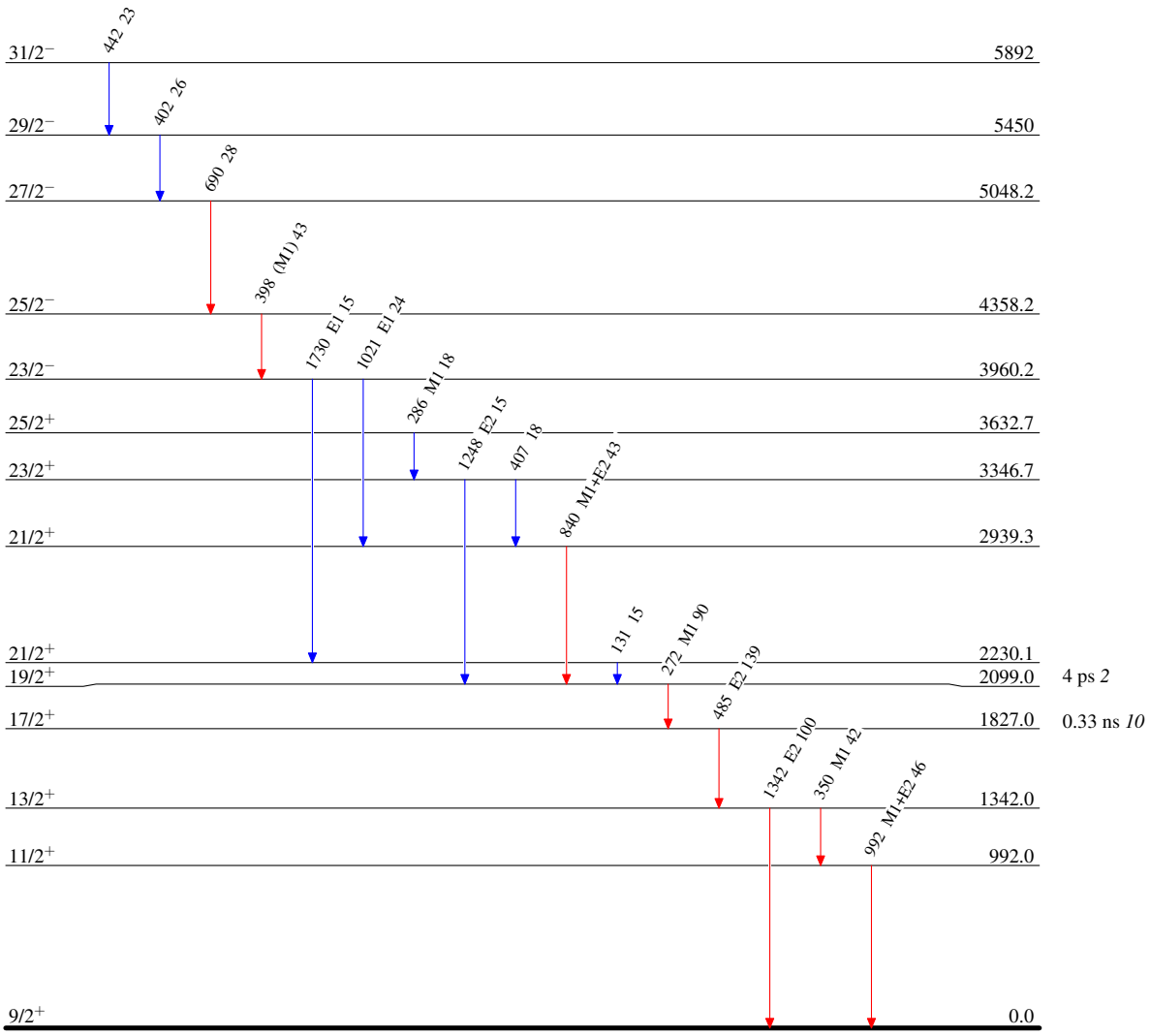
Intensities: Relative I_γ

Legend

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

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

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



$^{105}_{49}In_{56}$

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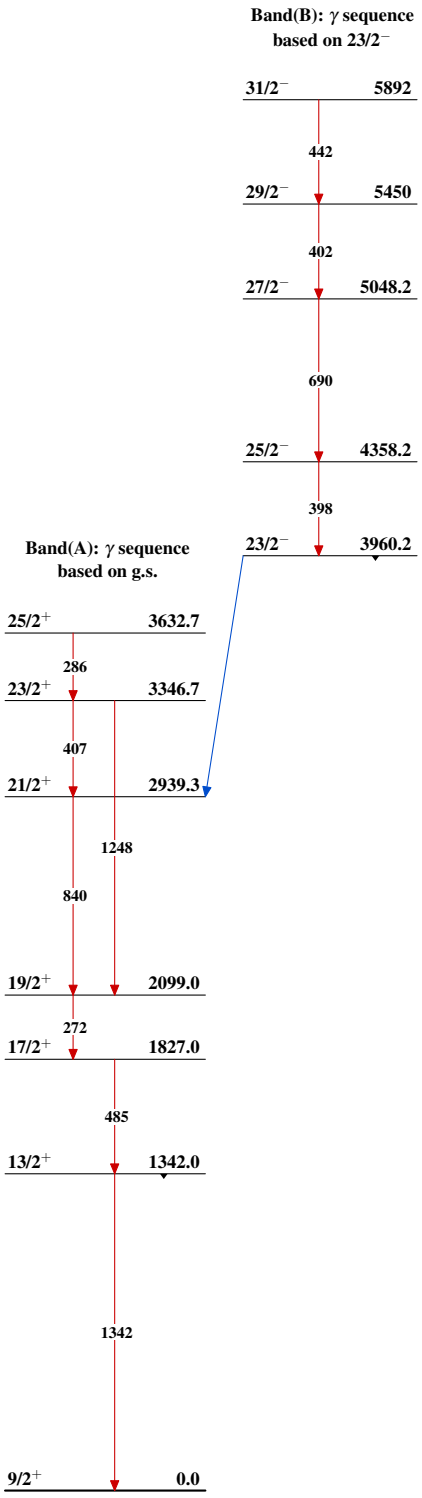

$^{105}_{49}In_{56}$