^{51}V(^{20}Ne,Xγ) 2008Ki14

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yang Dong, Huo Junde	NDS 121, 1 (2014)	20-Jun-2014

E=145 MeV, Measured: Eγ, Iγ, $\gamma\gamma$-coin, integrated-polarizational and correlations from oriented nuclei (IPDCO) and DCO ratios. Detector array comprising of eight Compton-suppressed germanium detectors (INGA); two detectors at 40° (forward) and two detectors at 125° (backward) with the rest at 90° with respect to the incident beam. Comparisons with shell model calculations using the OXBASH code.

^{54}Mn Levels

E(level)†	J$^\pi$‡	E(level)†	J$^\pi$‡	E(level)†	J$^\pi$‡	E(level)†	J$^\pi$‡
0.0#	3$^+$	1137.1 *4*	6$^+$	2516.7@ *5*	9$^+$	3258.9 *4*	
156.21# *20*	4$^+$	1669.3@ *4*	7$^+$	2856.5# *4*	8$^+$	3790.9@ *5*	13$^+$
368.2# *3*	5$^+$	1784.0 *4*	7$^+$	2865.5@ *5*	11$^+$	3939.5 *4*	9$^+$
839.2 *4*		1832.1 *4*	(7$^+$)	3156.5 *5*	10$^+$	4771.5@ *6*	14$^+$
1073.0# *4*	6$^+$	1925.4 *4*	(7$^-$)	3244.3# *4*	9$^+$	4998.0@ *6*	(15$^+$)

† From a least-squares fit to Eγ's, 0.2 keV uncertainty assigned for each γ ray based on an e-mail reply of September 4, 2008, from one of the authors of 2008Ki14, where it is suggested as 0.1-0.3 keV, depending on the intensity of a γ ray.
‡ From deduced γ-ray transition multipolarities using the DCO and IPDCO data.
# Band(A): γ cascade based on g.s.
@ Band(B): γ cascade based on 1669, 7$^+$.

γ(^{54}Mn)

DCO=Iγ_1 at 90° gated on γ_2 at 40°/ Iγ_2 at 40° gated on γ_2 at 90°. The gating transition is is ΔJ=1, dipole. Under this geometry expected value is ≈0.88 for a ΔJ=1, dipole and ≈1.6 for a ΔJ=2, quadrupole transition, as shown in figure 3 of 2008Ki14.
POL=[a(Eγ)N(perpendicular)−N(parallel)]/ [a(Eγ)N(perpendicular)+N(parallel)], where a=N(parallel)(unpolarized)/ N(perpendicular)(unpolarized). Negative value of IPDCO corresponds to a magnetic transition; positive value of IPDCO to an electric transition, while a near-zero value indicates a mixed dipole/quadrupole transition.

E$_\gamma$	I$_\gamma$†	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.‡	Comments
156.21 *20*	100	156.21	4$^+$	0.0	3$^+$	M1	Mult.: DCO=1.01 *1*; POL=−0.27 *6*.
211.96 *20*	100	368.2	5$^+$	156.21	4$^+$	M1	Mult.: DCO=1.03 *3*; POL=−0.10 *4*.
226.43 *20*	0.45 *2*	4998.0	(15$^+$)	4771.5	14$^+$	(D)	Mult.: DCO=0.97 *6*.
348.79 *20*	1.54 *4*	2865.5	11$^+$	2516.7	9$^+$	E2	Mult.: DCO=1.77 *6*; POL=+0.44 *6*.
387.70 *20*	5.81 *9*	3244.3	9$^+$	2856.5	8$^+$	M1	Mult.: DCO=0.91 *12*; POL=−0.17 *2*.
471.00 *20*	0.56 *2*	839.2		368.2	5$^+$		
596.30 *20*	2.69 *6*	1669.3	7$^+$	1073.0	6$^+$	M1	Mult.: DCO=1.12 *6*; POL=−0.09 *7*.
639.78 *20*	1.57 *6*	3156.5	10$^+$	2516.7	9$^+$	M1	Mult.: DCO=0.63 *11*; POL=−0.50 *19*.
694.98 *20*	1.40 *3*	1832.1	(7$^+$)	1137.1	6$^+$	(D)	Mult.: DCO=0.69 *3*.
704.87 *20*	41.04 *16*	1073.0	6$^+$	368.2	5$^+$	M1	Mult.: DCO=1.08 *4*; POL=−0.09 *1*.
711.00 *20*	2.13 *5*	1784.0	7$^+$	1073.0	6$^+$	D	
768.94 *20*	1.31 *4*	1137.1	6$^+$	368.2	5$^+$	M1	Mult.: DCO=0.61 *9*; POL=−0.13 *10*.
847.39 *20*	2.69 *6*	2516.7	9$^+$	1669.3	7$^+$	E2	Mult.: DCO=2.1 *3*; POL=+0.29 *7*.
852.35 *20*	19.75 *16*	1925.4	(7$^-$)	1073.0	6$^+$	(E1)	Mult.: DCO=0.41 *3*; POL=+0.05 *1*.
925.43 *20*	1.31 *5*	3790.9	13$^+$	2865.5	11$^+$	E2	Mult.: DCO=1.70 *6*; POL=+0.102 *10*.
931.04 *20*	5.52 *9*	2856.5	8$^+$	1925.4	(7$^-$)	D	Mult.: DCO=0.48 *7*.
980.59 *20*	1.88 *4*	4771.5	14$^+$	3790.9	13$^+$	M1	Mult.: DCO=0.70 *4*; POL=−0.15 *9*.
1072.37 *20*	6.84 *10*	2856.5	8$^+$	1784.0	7$^+$	M1	Mult.: DCO=0.47 *3*; POL=−0.07 *3*.

Continued on next page (footnotes at end of table)

^{51}V(^{20}Ne,Xγ) 2008Ki14 (continued)

γ(^{54}Mn) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
1082.72 *20*	5.11 *8*	3939.5	9^+	2856.5	8^+	M1	Mult.: DCO=0.62 *1*; POL=−0.20 *5*.
1415.81 *20*	26.21 *18*	1784.0	7^+	368.2	5^+	E2	Mult.: DCO=1.54 *10*; POL=+0.08 *2*.
1460.40 *20*	18.12 *20*	3244.3	9^+	1784.0	7^+	E2	Mult.: DCO=1.69 *8*; POL=+0.35 *4*.
1557.20 *20*	1.82 *5*	1925.4	(7^-)	368.2	5^+	(Q)	Mult.: DCO=1.51 *34*.
1783.40 *20*	11.89 *19*	2856.5	8^+	1073.0	6^+	E2	Mult.: DCO=1.78 *23*; POL=+0.19 *3*.
2014.20 *20*	0.85 *3*	3939.5	9^+	1925.4	(7^-)	(Q)	
2185.80 *20*	1.53 *4*	3258.9		1073.0	6^+		

[†] The quoted uncertainties include errors due to background subtraction, fitting and efficiency correction. The quoted uncertainties are in percent as confirmed in an e-mail reply of September 4, 2008 from of the authors of 2008Ki14.

[‡] From measured DCO ratios and linear polarizations.

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Level Scheme

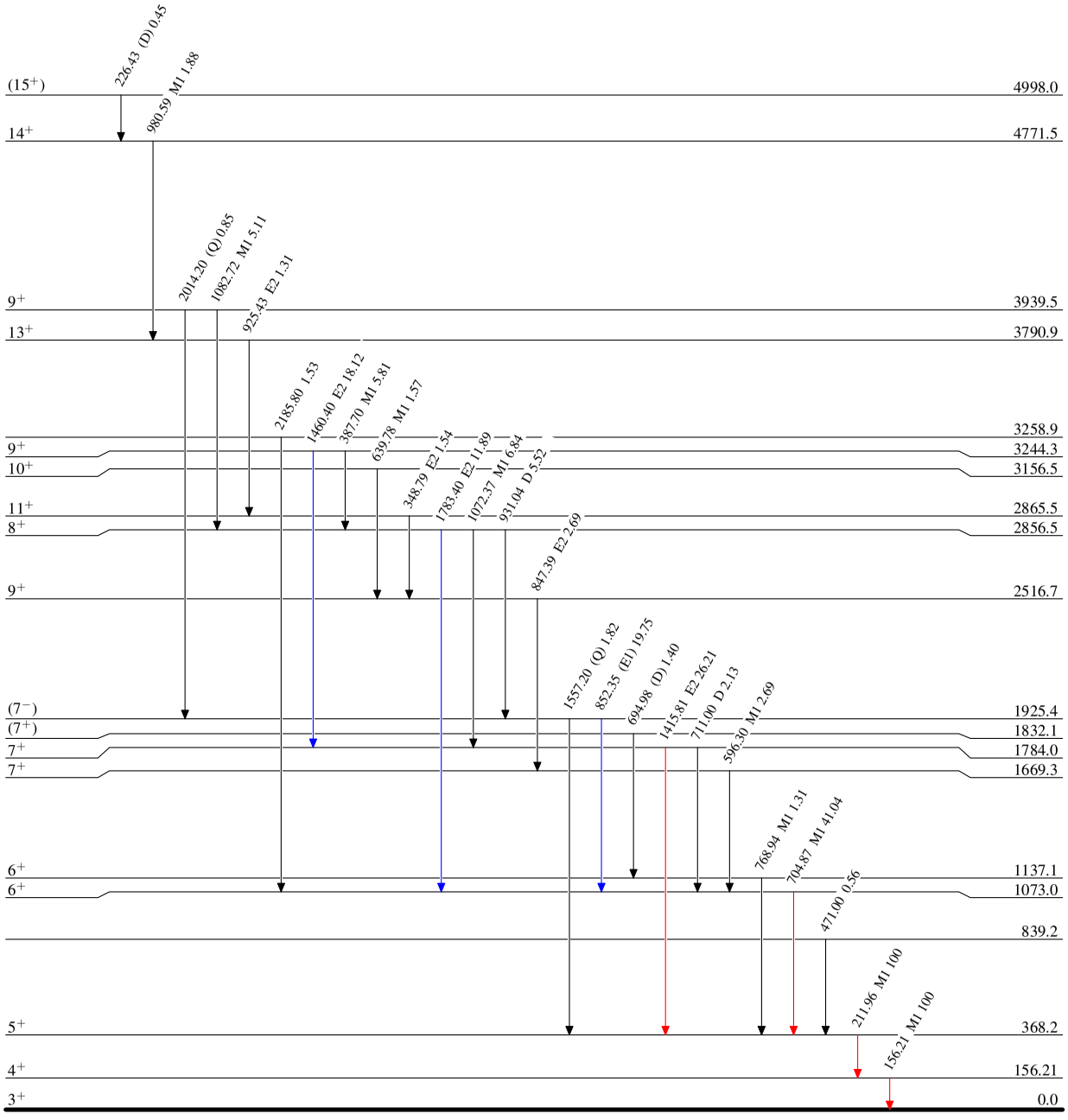
Intensities: Relative I_γ

Legend

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

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

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



$^{54}_{25}Mn_{29}$

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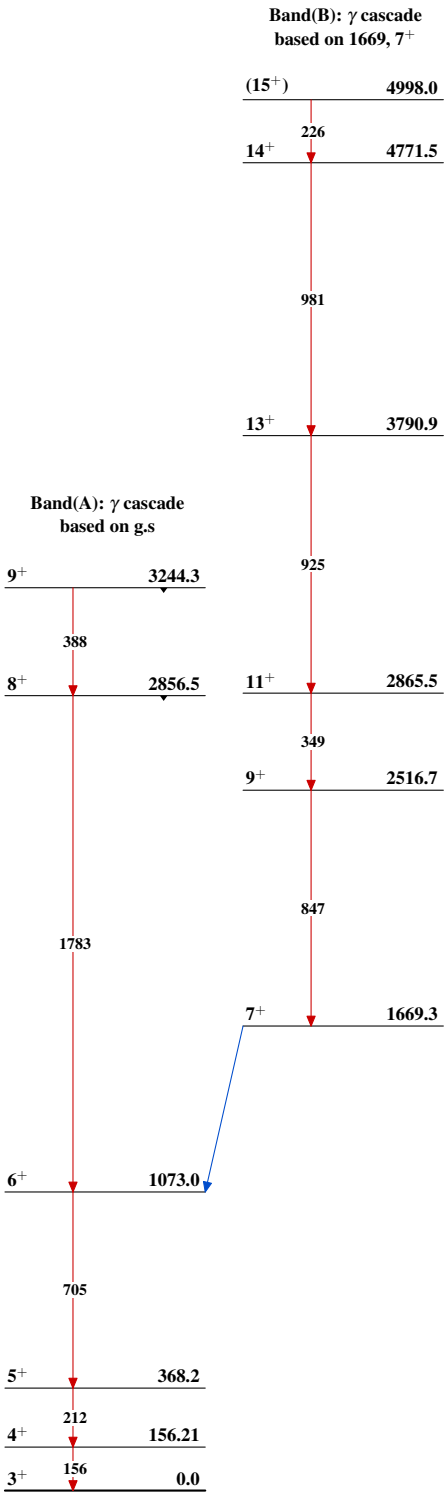

$^{54}_{25}Mn_{29}$