9 Be(61 V, 60 Ti γ) 2014Ga07

History									
Туре	Author	Citation	Literature Cutoff Date						
Full Evaluation	Balraj Singh	ENSDF	27-May-2014						

One-proton knockout reaction.

2014Ga07: $E(^{61}V)=90.0 \text{ MeV/nucleon}$ beam from Coupled Cyclotron Facility at NSCL-MSU. Secondary ^{61}V beam produced in $^{9}Be(^{82}Se,X),E=140 \text{ MeV/nucleon}$ primary reaction followed by fragment separation by A1900 fragment separator. Secondary ^{9}Be target=376 mg/cm² thick located at target position of S800 magnetic spectrograph. Measured $E\gamma$, $I\gamma$, $\gamma\gamma$ -coin, and $(^{60}Ti)\gamma$ -coin using GRETINA array of 36-folded segmented HPGe detectors arranged in 58° and 90° geometry. Gamma-ray energies were deduced from Doppler- corrected spectra. Deduced levels, J, π . Comparison of level structure in ^{60}Ti with shell-model calculations.

⁶⁰Ti Levels

Total measured σ for population of g.s., first 2⁺ and 4⁺ states is 7.9 mb 7 (2014Ga07).

E(level)	J^{π}	Percent population [†]	Comments		
0	0+	29 12	Percent population includes contribution from unobserved levels which do not feed the first 2^+ and 4^+ states.		
850 5					
1716 7	$(4^+)^{\ddagger}$	40 10			

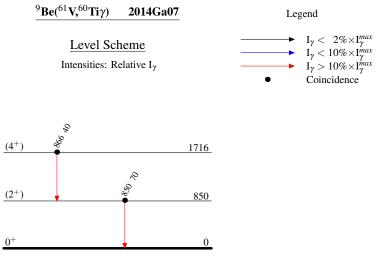
[†] Level population in percent. If a single γ ray of 860 keV is considered, then based on GEANT4 simulation of GRETINA array, 111% 12 of the knockout intensity is depopulated through this one γ ray, with no population of any level higher than first 2⁺ state, which is considered unlikely. From the asymmetric peak shape of the 860 γ peak in spectrum, and $\gamma\gamma$ -coincidences, this peak is split in 850 γ from first 2⁺ state and 866 γ from first 4⁺ state, with respective populations of 30% 11 and 40% 10; while 29% 12 of the intensity related with ground state and unobserved levels does not feed the first 2⁺ and 4⁺ states.

[‡] From systematics of even-even nuclei, and comparison with shell-model calculations.

$\gamma(^{60}\text{Ti})$

Eγ	I_{γ}^{\dagger}	E_i (level)	\mathbf{J}_i^{π}	\mathbf{E}_{f}	\mathbf{J}_{f}^{π}
850 5 866 5	70 <i>15</i> 40 <i>11</i>	850 1716	(2^+) (4 ⁺)	0	$\frac{0^{+}}{(2^{+})}$

[†] Deduced by the evaluator from relative level populations given by 2014Ga07.



⁶⁰₂₂Ti₃₈