

$^9\text{Be}(^{56}\text{Ti}, ^{55}\text{Ti}\gamma)$ 2009Ma16

Type	History		Literature Cutoff Date
	Author	Citation	
Full Evaluation	Balraj Singh	ENSDF	30-Apr-2022

This dataset adapted from compiled dataset from 2009Ma16 in the XUNDL database by F.G. Kondev (ANL), May 1, 2009.

2009Ma16: ^{55}Ti levels populated in one-neutron knockout reaction. ^{56}Ti secondary beam was produced in $^9\text{Be}(^{86}\text{Kr}, X)$, $E=500$ MeV/nucleon fragmentation reaction. Fragments of interest were separated using FRS fragment separator at GSI facility and identified on an event-by-event basis and transported to the focal plane of the FRS, where the ions were incident on a ^9Be reaction target. Reaction products of interest were identified event-by-event in the second dipole stage of the FRS and transported to the final FRS focus, and detected using six time projection chambers (TPC). Measured reaction products, and prompt gamma-rays emitted by the reaction products, detected with the eight triple-cluster detectors of the Miniball array. A total of 1.6 million fully stripped ^{56}Ti primary fragments were detected, which produced 13 thousand ^{55}Ti residues from the one-neutron knockout reaction. Measured E_γ , and longitudinal momentum distributions. Comparison with shell-model calculations using GXPF1A and KB3G interactions.

Additional information 1.

 ^{55}Ti Levels

Measured total cross-section for population of $^{55}\text{Ti}=83$ mb 12.

<u>E(level)[†]</u>	<u>J^π[‡]</u>	<u>L</u>	<u>Comments</u>
0	$1/2^-$	1	J^π : L(n)=1 momentum distribution in knock-out from $\nu p_{1/2}$ orbital. Dominant configuration= $\nu p_{1/2}^{-1}$.
955 6	$3/2^-$	1	E(level): from E_γ . J^π : L(n)=1 exclusive momentum distribution in knock-out from $\nu p_{3/2}$ orbital. Dominant configuration= $\nu p_{3/2}^{-1}$. Measured exclusive $\sigma=22$ mb 6 (2009Ma16); may include significant contributions from higher-lying states.

[†] Only one level at 955 keV is populated significantly with 48 12 counts in the 955-keV γ -ray peak, above the background.

However, 2009Ma16 mention that the γ -ray spectrum also showed an unresolved component up to high energies, indicating that population of higher excited states.

[‡] From 2009Ma16, based on measured momentum distributions and comparison with theoretical predictions for different L-values in one-neutron knock-out reaction.

 $\gamma(^{55}\text{Ti})$

<u>E_γ</u>	<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>
955 6	955	$3/2^-$	0	$1/2^-$

${}^9\text{Be}({}^{56}\text{Ti}, {}^{55}\text{Ti}\gamma)$ 2009Ma16Level Scheme