${}^{1}\text{H}({}^{63}\text{V,2p}\gamma)$ **2020Co01**

History

Type Author Citation Literature Cutoff Date
Full Evaluation Balraj Singh, Huang Xiaolong, and Wang Xianghan NDS 204,1 (2025) 30-Jun-2023

2020Co01: E(⁶³V)≈200 MeV/nucleon, secondary ⁶³V beam from ⁹Be(⁷⁰Zn,X),E=345 MeV/nucleon primary reaction followed by separation of fragments of interest event-by-event using BigRIPS spectrometer at RIBF-RIKEN. Measured yields of reaction products with Eγ, Iγ, γγ-coin, cross sections for population of levels in ⁶²Ti using MINOS device, SAMURAI dipole magnet, Time Projection Chamber (TPC), and DALI2⁺ array of 226 NaI(Tl) detectors. A total of 1880 events corresponding to the production of ⁶²Ti reaction were observed. Deduced first 2⁺ and 4⁺ levels. Gamma-ray spectra were Doppler corrected. Comparison with large-scale shell model (LSSM) calculations, using symmetry conserving configuration mixing (SCCM) and Gogny D1S effective interaction, and valence-space in-medium similarity renormalization group (VS-IMSRG).

⁶²Ti Levels

E(level) [†]	$J^{\pi \ddagger}$	Comments
0	0+	Exclusive σ =1.4 mb 4, from subtraction of σ for observed transitions from the measured inclusive σ (2020Co01).
683 10	(2^{+})	Measured exclusive σ =1.3 mb 4 (2020Co01), assuming 100% or no feeding by the unplaced 1222 and 1328 γ rays.
1506 22	(4^{+})	Measured exclusive σ =0.8 mb I (2020Co01).

[†] From Ey values.

γ(⁶²Ti)

E_{γ}	I_{γ}	$E_i(level)$	\mathbf{J}_i^{π}	\mathbf{E}_f	\mathbf{J}_f^{π}	Comments
^x 320						Tentative peak observed with 1σ significance level, but not included in cross section determinations (2020Co01).
683 10	1.3 4	683	(2^{+})	0	0_{+}	
823 20	0.8 1	1506	(4^{+})	683	(2^{+})	
^x 1222 37	0.2 1					This peak observed with 2σ significance level. Measured exclusive σ =0.2 mb $I(2020\text{Co}01)$.
^x 1328 45	0.3 1					This peak observed with 3σ significancelevel. Measured exclusive σ =0.3 mb I (2020Co01).

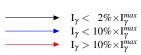
 $^{^{}x}$ γ ray not placed in level scheme.

[‡] As given in Fig. 2a of 2020Co01, based on level-energy and J^{π} systematics in the neighboring even-even nuclides with N=40 and Z=20-32, and also from model calculations.

1 H(63 V,2p γ) 2020Co01

Level Scheme

Intensities: Measured cross sections in mb



Legend

