^{3}H(t,p) 2003Go11

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. E. Purcell, C. G. Sheu	ENSDF	28-Feb-2019

1968Yo06: The energy of the incident tritons was 22.25 MeV from LANL electrostatic accelerator. The target was a tritium gas target. The energy spectrum of the protons was observed at four angles. A broad peak was observed in the proton spectrum ≈1.8 MeV above the ^{3}H+2n threshold with a width of Γ≈1.2 MeV. The authors stop short of identifying their observed structure as a ^{5}H state due to its similarity with a four body phase space spectrum. In their discussion of the (1968Yo06) article, the authors of (2017Wu03) note that the 22.25 MeV energy was too low to effectively observe ^{5}H states.

2003Go11: The experiment was performed at Flerov Laboratory of Nuclear Reactions in Dubna. The triton beam had an energy of 57.5 MeV, the target was liquid tritium. The detected particles were the reaction p and t and n from the decay of ^{5}H. Using the missing mass method, the ^{5}H spectrum was determined. Resonances were observed at E_{res}=1.8 MeV *1* and 2.7 MeV *1*, both with widths less than 0.5 MeV. The authors attribute the 1.8 MeV resonance to the expected $1/2^{+}$ ground state and the 2.7 MeV to the expected $3/2^{+}$ or $5/2^{+}$ excited states. See (2002Og12,2002TeZZ,2003Ko68,2003Re06,2003Te16,2004Go54) for more discussion of the results of this experiment. Also see Oganessian et al., Nuclear Physics at Border Lines (2002) pp. 372-375.

2004Go54,2005Go46: The triton beam with an energy of 57.7 MeV from the cyclotron at Flerov Laboratory of Nuclear Reactions in Dubna was focused on a cryogenic tritium target, see (2003Yu07). The detected particles were the reaction p and t and n from the decay of ^{5}H. Using the missing mass method, the ^{5}H spectrum was determined. A broad structure in the ^{5}H spectrum above 2.5 MeV was determined to be a mixture of $5/2^{+}$ and $3/2^{+}$ states. It was also determined, in (2004Go54), that the $1/2^{+}$ ground state is located at ≈2MeV. In (2005Go46), it was determined that the ground state resonance energy and width were E_{res}≈1.8 MeV and Γ≈1.3 MeV. See also (2005GoZY,2005Te05). Note: energies are measured relative to the ^{3}H+2n threshold.

^{5}H Levels

E(level)	J^{π} †	Γ	$E_{res}(^{3}H+2n)$(MeV)	Comments
0	$(1/2^{+})$	≈1.3 MeV	≈1.8	E(level): From (2005Go46). Earlier results in (2003Go11) reported $E_{res}(^{3}H+2n)$≈1.8 MeV and Γ<0.5 MeV along with a second narrow state. See other results and discussion in (1968Yo06, 2017Wu03).
x	$(3/2^{+},5/2^{+})$		>2.5	Γ: Broad. Likely corresponds to unresolved strength from the $J^{\pi}=3/2^{+}$ and $5/2^{+}$ states (2005Go46).

† From systematics.