## $^{2}$H(n,$\gamma$) E=thermal 1982Ju01

History

| Type | Author | Citation | Literature Cutoff Date |
|---|---|---|---|
| Full Evaluation | J. E. Purcell[#], C. G. Sheu[*] | NDS 130 1 (2015) | 30-Jun-2015 |

Target $J^{\pi}=1^{+}$.

The value for the cross section for thermal neutron capture by $^{2}$H recommended in (2006MuZX) is $\sigma(E_{thermal},\gamma)=0.508$ mb *15*.

However, note that the value recommended in (2011Fi11) is $\sigma(E_{thermal},\gamma)=0.549$ mb *10*.

Articles containing measurements of neutron capture by $^{2}$H:

| Reference | Comments |
|---|---|
| 1947Sa33 | Measured thermal neutron capture cross section, \ 0.46 mb *11* |
| 1952Ka47 | Measured thermal neutron capture cross section, \ 0.57 mb *1* |
| 1968Me26 | Measured thermal neutron capture cross section, \ 0.521 mb *9* |
| 1973Is08 | Measured thermal neutron capture cross section, \ 0.55 mb *1*; note-this reference also includes other thermal cross section \ measurements from the 1960's not readily available today |
| 1980Al31 | Measured effective thermal neutron capture cross \ section |
| 1982Ju01 | Measured thermal neutron capture cross section, \ 0.508 mb *15* |
| 1988Ab04, 1988Ko07 | Studied capture of polarized thermal neutrons; \ obtained photon polarization parameter R=-0.42 *3* |
| 1988Al29 | Slow, polarized neutrons, study of parity violation |
| 1998Na15 | Measured capture cross section to be 2.12 $\mu$b *35* \ at $E_n$=30.5 keV and 2.04 $\mu$b *3* at 54.2 keV |
| 2006Na35 | Measured capture cross section to be 2.23 $\mu$b *34* \ at $E_n$=30.5 keV, 1.99 $\mu$b *25* at 54.2 keV, 3.76 $\mu$b *41* at 531 \ keV |

### $^{3}$H Levels

| E(level)[†] | $J^{\pi}$[†] | $T_{1/2}$[†] | Comments |
|---|---|---|---|
| 0.0 | $1/2^{+}$ | 12.32 y *2* | |
| (6257.2482 *24*) | $1/2^{+},3/2^{+}$ | | $J^{\pi}$: from s-wave neutron capture. |

[†] From Adopted Levels.

### $\gamma(^{3}H)$

| $E_\gamma$ | $I_\gamma$[†‡] | $E_i$(level) | $J_i^{\pi}$ | $E_f$ | $J_f^{\pi}$ | Comments |
|---|---|---|---|---|---|---|
| 6250.258 *3* | 100 | (6257.2482) | $1/2^{+},3/2^{+}$ | 0.0 | $1/2^{+}$ | $E_\gamma$: from level-energies difference. |

[†] Intensity per 100 neutron captures.

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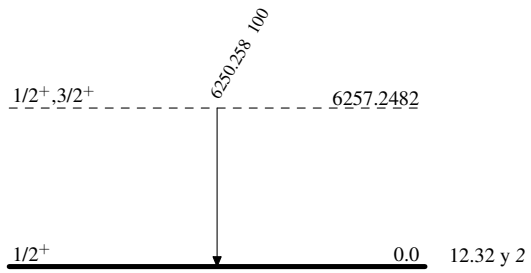
Level Scheme

Intensities: Relative $I_{\gamma}$




$^{3}_{1}H_{2}$