

Adopted Levels

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

S(p)=5493.477 2 [2012Wa38](#)

The isotope ${}^3\text{He}$ was probably first observed in 1933-34. See ([2012Th01](#)) and references therein. That ${}^3\text{He}$ has spin 1/2 is reported in ([1949Do24,1950Di11](#)).

Calculations show that the ground state wave functions of ${}^3\text{H}$ and ${}^3\text{He}$ consist of a spatially symmetric S state ($\approx 90\%$), a D state ($\approx 9\%$), a mixed symmetry S' state ($\approx 1\%$) and a small P state ($< 0.1\%$). See ([1979Sa15,1986Is01,1987Er07,1993Wu08,2002Ho09](#)).

The ratio η_t of the asymptotic D state to S state of ${}^3\text{He}$ is $-0.0389 42$. This value is the inverse square of the uncertainty weighted average of the two most recent measurements ([1995Ay03,1997Ri07,1997Sc31](#)).

The charge and magnetic rms radii for ${}^3\text{He}$ are $r_c=1.959$ fm 30 and $r_m=1.965$ fm 153 ([1994Am07](#)). See ([2005Go26](#)) for electric and magnetic form factors for ${}^3\text{H}$ and ${}^3\text{He}$ as well as T=0, 1 form factors and comparison with theory. See the reaction ${}^3\text{He}(e,e){}^3\text{He}$ below for more details.

The magnetic moment, $\mu=-2.127625306 25$, is from Table XLI of ([2012Mo42](#)).

 ${}^3\text{He}$ LevelsCross Reference (XREF) Flags

A	${}^1\text{H}({}^6\text{Li},\alpha)$	D	${}^3\text{H} \beta^-$ decay
B	${}^2\text{H}(p,\gamma)$	E	${}^3\text{He}(\gamma,p), {}^3\text{He}(\gamma,n)$
C	${}^2\text{H}(p,p),(p,n), {}^1\text{H}(d,d),(d,n)$	F	${}^3\text{He}(e,e)$

E(level)	J $^\pi$	T _{1/2}	XREF	Comments
0.0	1/2 ⁺	stable	AB D F	$\mu=-2.127625306 25$ (2012Mo42) ${}^3\text{He}$ Mass excess: 14931.2155 keV 23 (2012Wa38). ${}^3\text{He}$ binding energy: 7718.0428 keV 23; S(p)=5493.4768 keV 23 using mass excess values from (2012Wa38).