

Adopted Levels

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, J. L. Godwin			1-May-2003

S(n)=2224.566 1; S(p)=2224.566; Q(α)=1 2012Wa38

Note: Current evaluation has used the following Q record 2224.573 2224.573 2

1997Au04,1997Br44.

The deuteron mass excess is 13135.720 1 keV (1997Au04).

Deuteron binding energy from capture γ wavelength =
2224.5890 22 keV (1986Gr01); revised to 2224.5756 22 keV by update of
fundamental constants (1990Wa22).

Other measured values related to the deuteron mass are:

Mass	comment
2.01410177795 60	U (amu) from n+p ground state transition (1997Ro2 6)
1875.612762 75	MeV/c ² (2000Gr22).
2.013553214 24	U (amu) (1987Co39).
2.014101764 13	U (amu) from Fourier-transform ion-cyclotron-resonance mass spectrometry (1993Go37). Also deduce S(n)=2224.579 13 keV.
2.01410177403 86	U (amu) from Penning trap mass spectrometry (1993VaZY).
2.0141017779 5	U (amu) from Penning trap ion cyclotron resonance method (1997Br44).

 ${}^2\text{H}$ Levels

E(level)	J $^{\pi}$	T _{1/2}	Comments																											
0	1 ⁺	stable	<p>μ=+0.857438230 24 (1987Co39,1996FiZY) Q=0.002860 15 (1996FiZY) Q: The authors of (1972Re08) used measurements of the quadrupole interaction constant for D₂ and HD molecules to calculate the deuteron quadrupole moment. Errors in the original value (0.2875 20 E-26 cm²) were corrected in an erratum to yield the presently accepted value 0.2860 15 E-26 cm². For other values in the literature, see Table 1 of (1972Re08). See (1979Bi14) who confirm (1973Re08) based on improved computation techniques. See (1993Ha33) who cite 0.2859 3 E-26 cm² based on (1979Bi14), however this value does not appear in the text of (1979Bi14). Also see (1985Ka05) who measured T₂₀ in ²⁰⁸Pb(²H,²H) and deduced 0.282 19 E-26 cm². μ: From (1987Co39): "The adjustment of the fundamental physical constants". Values for the asymptotic D/S-State ratio for the deuteron are summarized below (as given in (1990Ro02))</p> <table border="1"> <thead> <tr> <th>D/S</th> <th>Comment</th> <th>0.0256 4</th> </tr> </thead> <tbody> <tr> <td>0.0271 8</td> <td>from sub-Coulomb (d,p) (1990Ro02).</td> <td></td> </tr> <tr> <td>0.0270 6</td> <td>from sub-Coulomb (d,p) (1982Go20).</td> <td></td> </tr> <tr> <td>0.0259 7</td> <td>from (d,p) elastic scattering (1986Ho07).</td> <td></td> </tr> <tr> <td>0.0263 13</td> <td>from (d,p) elastic scattering (1980Gr06).</td> <td></td> </tr> <tr> <td>0.027 5</td> <td>from (d,p) elastic scattering (1979Co12).</td> <td></td> </tr> <tr> <td>0.0272 4</td> <td>from (d,p) elastic scattering (1978Am08).</td> <td></td> </tr> <tr> <td>0.0264 14</td> <td>from ²H(d,p) (1982Bo06).</td> <td></td> </tr> <tr> <td></td> <td>from (d,p) elastic scattering (1983Lo03).</td> <td></td> </tr> </tbody> </table>	D/S	Comment	0.0256 4	0.0271 8	from sub-Coulomb (d,p) (1990Ro02).		0.0270 6	from sub-Coulomb (d,p) (1982Go20).		0.0259 7	from (d,p) elastic scattering (1986Ho07).		0.0263 13	from (d,p) elastic scattering (1980Gr06).		0.027 5	from (d,p) elastic scattering (1979Co12).		0.0272 4	from (d,p) elastic scattering (1978Am08).		0.0264 14	from ² H(d,p) (1982Bo06).			from (d,p) elastic scattering (1983Lo03).	
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