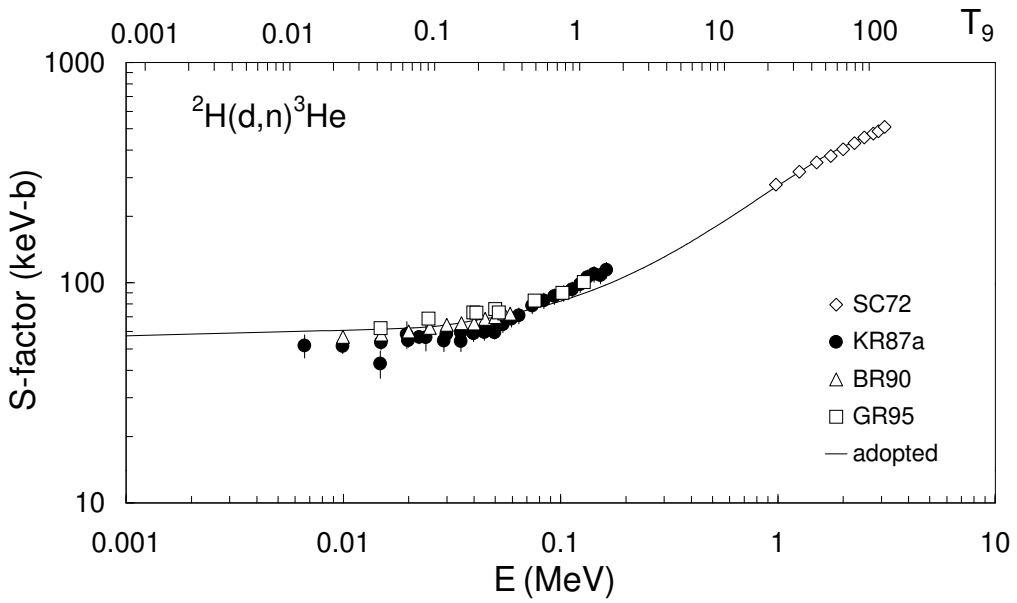
Reaction : ^{2}H(d,n)^{3}He

The non-resonant data of SC72, KR87a, BR90, and GR95 are used. The S-factor is fitted at low energies by $S(E) = \mathcal{S}_0 + \mathcal{S}_1 E + \mathcal{S}_2 E^2$, with $\mathcal{S}_0 = 0.055$ MeV b, $\mathcal{S}_1 = 0.308$ b and $\mathcal{S}_2 = -0.094$ MeV^{-1} b (E in MeV). Below $E = 10$ keV, the extrapolation of the S-factor depends on the degree of the polynomial. This sensitivity is taken into account in the uncertainties on the rate. The lower limit is calculated with the KR87a data only, while the upper limit is derived from the GR95 data only. At low temperatures ($T_9 < 0.3$), the present rates are slightly larger than the CA88 ones, obtained by using $\mathcal{S}_0 = 0.050$ MeV b, $\mathcal{S}_1 = 0.170$ b, and $\mathcal{S}_2 = 2.12$ MeV^{-1} b. The large difference in $\mathcal{S}_2$ also leads to an important reduction of the rate above $T_9 \approx 0.5$. The CA88 values have been obtained from a fit to the KR87a data only, restricted to energies lower than 200 keV. The high-energy data of SC72 (from 1 to 3 MeV) included in our calculation allow for a more precise determination of the S-factor at high energies. The present reaction rates agree within a few percent with the BO92 compilation.



T_9	low	adopt	high	exp	ratio	T_9	low	adopt	high	exp	ratio	T_9	low	adopt	high	exp	ratio
0.001	1.26	1.39	1.52	-8	1.1	0.04	1.47	1.61	1.76	4	1.1	0.5	5.03	5.49	5.95	6	0.9
0.002	5.22	5.75	6.30	-5	1.1	0.05	3.14	3.46	3.78	4	1.1	0.6	6.48	7.06	7.65	6	0.9
0.003	2.87	3.17	3.47	-3	1.1	0.06	5.59	6.15	6.72	4	1.1	0.7	7.95	8.64	9.35	6	0.8
0.004	3.55	3.91	4.28	-2	1.1	0.07	8.84	9.72	10.6	4	1.1	0.8	0.94	1.02	1.10	7	0.8
0.005	2.10	2.32	2.53	-1	1.1	0.08	1.29	1.41	1.54	5	1.1	0.9	1.09	1.18	1.27	7	0.7
0.006	8.11	8.94	9.79	-1	1.1	0.09	1.76	1.94	2.12	5	1.1	1	1.23	1.33	1.44	7	0.7
0.007	2.38	2.62	2.87	0	1.1	0.1	2.31	2.54	2.78	5	1.1	1.25	1.58	1.71	1.84	7	0.6
0.008	5.75	6.34	6.93	0	1.1	0.11	2.93	3.22	3.51	5	1.1	1.5	1.91	2.06	2.21	7	0.5
0.009	1.21	1.33	1.46	1	1.1	0.12	3.61	3.97	4.33	5	1.1	1.75	2.23	2.40	2.57	7	0.5
0.01	2.30	2.53	2.77	1	1.1	0.13	4.35	4.77	5.21	5	1.1	2	2.54	2.73	2.91	7	0.4
0.011	4.01	4.42	4.83	1	1.1	0.14	5.14	5.64	6.15	5	1.1	2.5	3.12	3.33	3.54	7	0.4
0.012	6.56	7.23	7.91	1	1.1	0.15	5.98	6.57	7.16	5	1.1	3	3.64	3.87	4.11	7	0.3
0.013	1.02	1.12	1.23	2	1.1	0.16	6.87	7.54	8.22	5	1.1	3.5	4.13	4.37	4.61	7	0.3
0.014	1.51	1.66	1.82	2	1.1	0.18	8.78	9.63	10.5	5	1.1	4	4.58	4.83	5.08	7	0.2
0.015	2.16	2.38	2.61	2	1.1	0.2	1.08	1.19	1.29	6	1.1	5	5.39	5.63	5.88	7	0.2
0.016	3.00	3.30	3.62	2	1.1	0.25	1.65	1.80	1.96	6	1.1	6	6.11	6.33	6.55	7	0.2
0.018	5.34	5.89	6.44	2	1.1	0.3	2.27	2.48	2.70	6	1.0	7	6.76	6.95	7.14	7	0.1
0.02	8.77	9.66	10.6	2	1.1	0.35	2.93	3.20	3.48	6	1.0	8	7.36	7.51	7.66	7	0.1
0.025	2.35	2.59	2.84	3	1.1	0.4	3.61	3.94	4.28	6	1.0	9	7.95	8.05	8.14	7	0.1
0.03	4.97	5.48	5.99	3	1.1	0.45	4.31	4.71	5.11	6	0.9	10	8.53	8.57	8.60	7	0.1