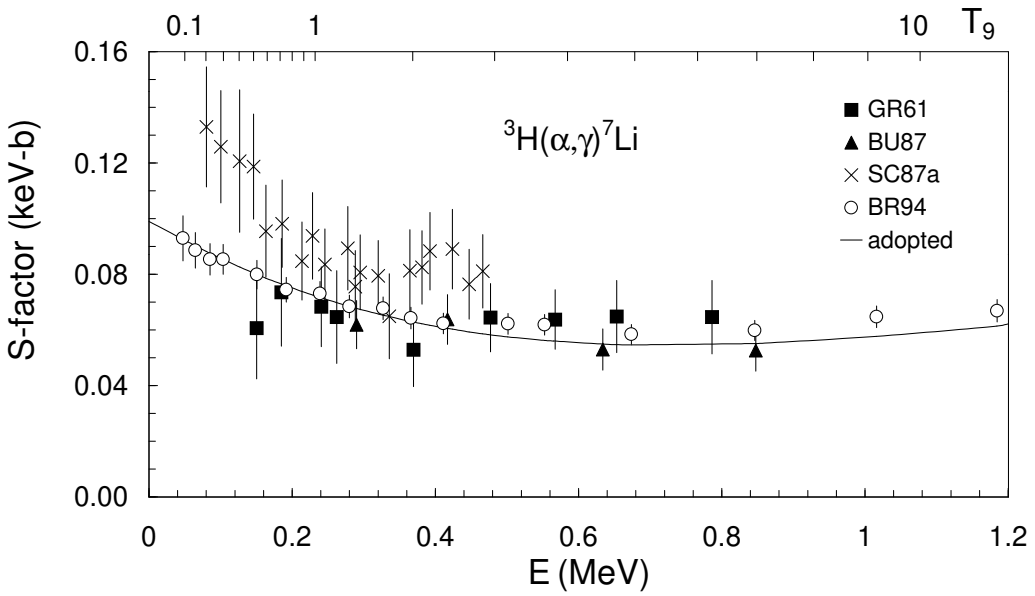
Reaction : $^3\mathrm{H}(\alpha,\gamma)^7\mathrm{Li}$

Non-resonant cross section data from GR61, BU87 and BR94 covering the energy range $0.047 \leq E \leq 1.18$ MeV are used. The data of SC87a, which have an inconsistent normalization, are disregarded. Nuclear models explain well the low energy dependence without the inclusion of electron screening [KA86, LA86a, MO93]. Up to 2.5 MeV, we use the energy dependence given by the microscopic calculation of KA86. A renormalization factor 1.01 ± 0.11 is obtained from a χ^2 analysis of the data. The recommended S-factor at zero energy is $S_0 = 0.10 \pm 0.02$ keV b. For $E \leq 0.4$ MeV, the S-factor can be well approximated by the expression $S(E) = 0.10 - 0.15\,E + 0.13\,E^2$ (E in MeV, $S(E)$ in keV b). The present rate is in perfect agreement with the CA88 compilation in the temperature range $T_9 \leq 1$. However, for $T_9 > 1$, the present rates are significantly lower, up to a factor 5 near $T_9 = 10$. This difference is due to the S-factor used by CA88, which fits well the experimental data up to about 0.2 MeV, while it increases unphysically at higher energies. The present results are in good agreement with the rates given in BR94.



T_9	low	adopt	high	exp	ratio	T_9	low	adopt	high	exp	ratio	T_9	low	adopt	high	exp	ratio
0.002	6.51	7.30	8.10	-21	1.0	0.05	1.56	1.75	1.94	-3	1.0	0.6	5.60	6.28	6.97	1	1.0
0.003	1.65	1.85	2.05	-17	1.0	0.06	5.01	5.63	6.24	-3	1.0	0.7	7.96	8.93	9.90	1	1.0
0.004	2.28	2.56	2.84	-15	1.0	0.07	1.26	1.42	1.57	-2	1.0	0.8	1.06	1.19	1.32	2	1.0
0.005	7.55	8.48	9.40	-14	1.0	0.08	2.70	3.03	3.36	-2	1.0	0.9	1.34	1.50	1.67	2	1.0
0.006	1.08	1.22	1.35	-12	1.0	0.09	5.11	5.73	6.36	-2	1.0	1	1.64	1.84	2.04	2	1.0
0.007	0.91	1.02	1.13	-11	1.0	0.1	8.83	9.91	11.0	-2	1.0	1.25	2.42	2.72	3.02	2	0.9
0.008	5.21	5.85	6.48	-11	1.0	0.11	1.42	1.59	1.77	-1	1.0	1.5	3.25	3.64	4.04	2	0.9
0.009	2.28	2.56	2.84	-10	1.0	0.12	2.16	2.42	2.69	-1	1.0	1.75	4.09	4.59	5.08	2	0.8
0.01	0.81	9.11	1.01	-9	1.0	0.13	3.13	3.52	3.90	-1	1.0	2	4.93	5.54	6.14	2	0.8
0.011	2.46	2.76	3.06	-9	1.0	0.14	4.38	4.92	5.45	-1	1.0	2.5	6.63	7.44	8.26	2	0.6
0.012	6.55	7.35	8.15	-9	1.0	0.15	5.93	6.66	7.38	-1	1.0	3	8.34	9.36	10.4	2	0.5
0.013	1.57	1.76	1.96	-8	1.0	0.16	7.82	8.77	9.73	-1	1.0	3.5	1.00	1.13	1.25	3	0.5
0.014	3.46	3.88	4.30	-8	1.0	0.18	1.27	1.43	1.58	0	1.0	4	1.18	1.32	1.47	3	0.4
0.015	7.07	7.93	8.80	-8	1.0	0.2	1.92	2.16	2.39	0	1.0	5	1.54	1.73	1.91	3	0.3
0.016	1.36	1.53	1.69	-7	1.0	0.25	4.37	4.91	5.44	0	1.0	6	1.95	2.19	2.43	3	0.2
0.018	4.31	4.84	5.36	-7	1.0	0.3	8.09	9.08	10.1	0	1.0	7	2.49	2.79	3.10	3	0.2
0.02	1.16	1.31	1.45	-6	1.0	0.35	1.31	1.47	1.63	1	1.0	8	3.26	3.66	4.06	3	0.2
0.025	8.43	9.46	1.05	-6	1.0	0.4	1.94	2.18	2.42	1	1.0	9	4.41	4.95	5.49	3	0.2
0.03	3.80	4.26	4.72	-5	1.0	0.45	2.70	3.03	3.36	1	1.0	10	6.13	6.88	7.62	3	0.2
0.04	3.36	3.77	4.18	-4	1.0	0.5	3.57	4.00	4.44	1	1.0						