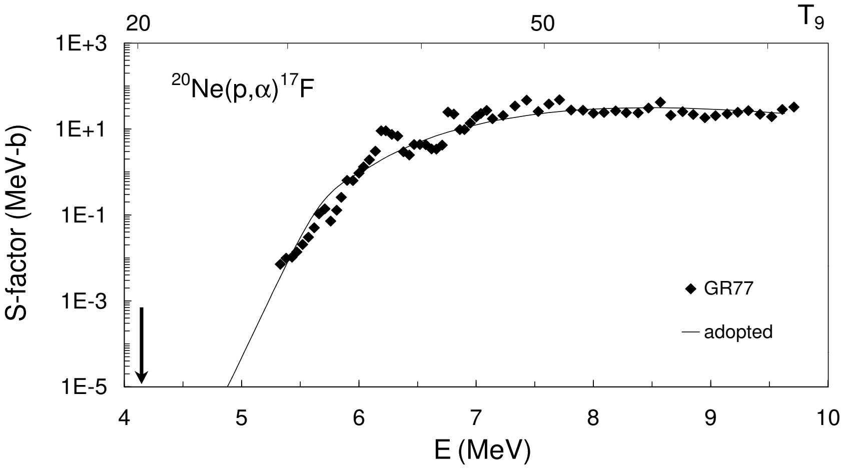
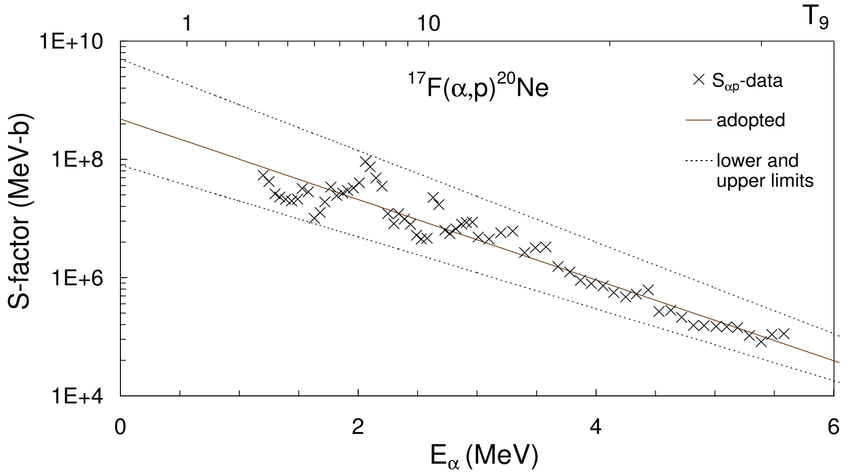
Reaction : ^{20}Ne(p,α)^{17}F

For this endoergic reaction ($Q = -4.130$ MeV), the experimental data are missing between the threshold and $E = 5.33$ MeV. The rates are calculated from the unique set of available cross section data [GR77]. The existing data at the lowest energies do not allow a clear picture of the behaviour of the S-factor curve. In order to extrapolate the cross section down to the threshold, the S-factor $S_{\alpha,\mathrm{p}}$ for the reverse reaction ^{17}F(α,p)^{20}Ne is approximated by an exponential function $S_{\alpha,\mathrm{p}} = 4.83 \times 10^8 \exp(-1.5693 E_\alpha)$, where E_α is the centre of mass energy in the channel α+^{17}F, and extrapolated down to the threshold. For the calculation of the lower and upper limits of the rates, exponential fits $S^{\max}_{\alpha,\mathrm{p}} = 5.0 \times 10^9 \exp(-1.7829 E_\alpha)$ and $S^{\min}_{\alpha,\mathrm{p}} = 8.0 \times 10^7 \exp(-1.3993 E_\alpha)$, that corresponds to the lower and upper bounds of $S_{\alpha,\mathrm{p}}$ are obtained and extrapolated similar to $S_{\alpha,\mathrm{p}}$. Our thermalization corrections are important, $r_{\mathrm{tt}} = 5.0$ to 4.8 for $T_9 = 0.9$ to 10 (CA88 adopted $r_{\mathrm{tt}} = 1$ for all T_9).





T_9	low	adopt	high	exp	ratio	T_9	low	adopt	high	exp	ratio	T_9	low	adopt	high	exp	ratio
0.9	0.23	1.22	10.6	-24	0.3	2.5	0.23	1.01	7.22	-4	0.6	7	0.34	1.19	6.40	4	0.8
1	0.22	1.14	9.72	-21	0.4	3	0.25	1.08	7.37	-2	0.7	8	1.33	4.53	23.6	4	0.8
1.25	0.64	3.22	26.6	-16	0.4	3.5	0.78	3.24	21.2	-1	0.7	9	0.39	1.28	6.48	5	0.8
1.5	0.35	1.72	13.7	-12	0.5	4	1.07	4.30	27.0	0	0.7	10	0.90	2.93	14.5	5	0.9
1.75	1.89	9.03	69.9	-10	0.5	5	0.44	1.69	9.95	2	0.8						
2	0.23	1.08	8.11	-7	0.6	6	0.55	2.01	11.3	3	0.8						