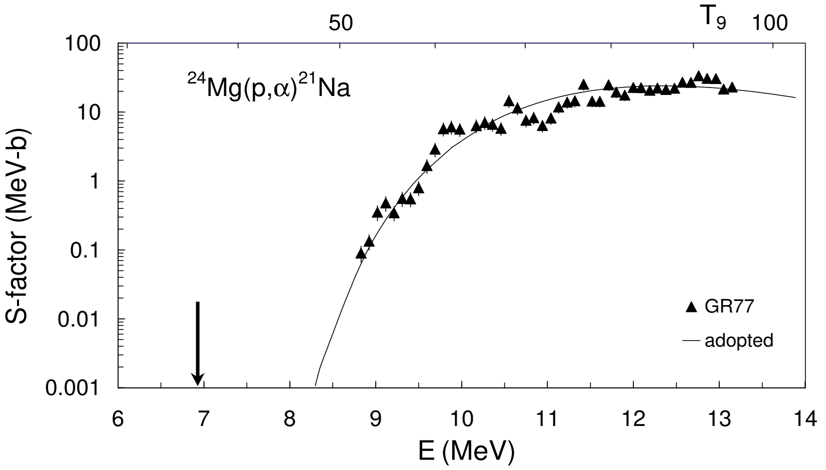
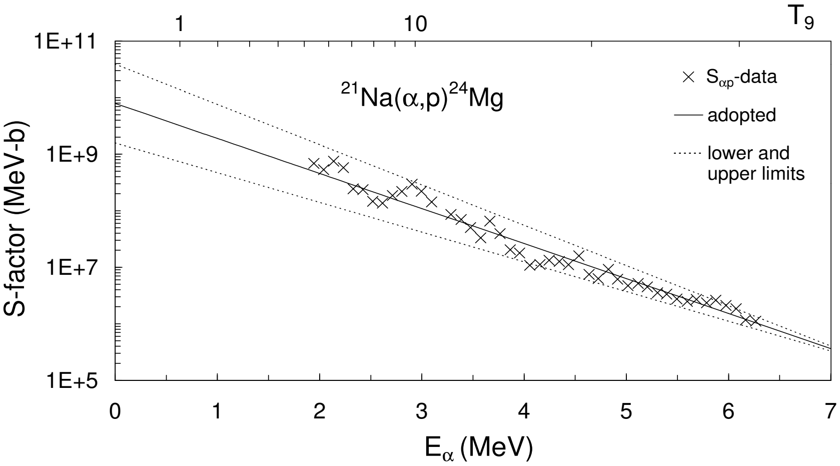
Reaction : ^{24}Mg(p,α)^{21}Na

For this endoergic reaction ($Q = -6.884$ MeV), a unique set of cross section data [GR77] is available, with no information between the threshold and $E = 8.83$ MeV. In order to extrapolate the cross section down to the threshold, the S-factor $S_{\alpha,\mathrm{p}}$ for the reverse reaction ^{21}Na(α,p)^{24}Mg is approximated by an exponential function $S_{\alpha,\mathrm{p}} = 7.92 \times 10^9 \exp(-1.4271 E_\alpha)$, where E_α is the center of mass energy in the channel α+^{21}Na, and extrapolated down to the threshold. For the calculation of the lower and upper limits of the rates, exponential fits $S^{\max}_{\alpha,\mathrm{p}} = 4.00 \times 10^{10} \exp(-1.5786 E_\alpha)$ and $S^{\min}_{\alpha,\mathrm{p}} = 2.00 \times 10^9 \exp(-1.2758 E_\alpha)$, that corresponds to the lower and upper bounds of $S_{\alpha,\mathrm{p}}$ are obtained and extrapolated to the threshold in a way similar to $S_{\alpha,\mathrm{p}}$. Our thermalization effects are $r_{\mathrm{tt}} = 6$ to 20 at $T_9 = 0.2$ to 10 while CA88 adopted the equal strength approximation here ($r_{\mathrm{tt}} = 1$ for all temperatures). A more accurate extrapolation needs data at lower energies.





T_9	low	adopt	high	exp	ratio	T_9	low	adopt	high	exp	ratio	T_9	low	adopt	high	exp	ratio
1.5	0.51	1.65	6.82	-23	0.2	3.5	1.21	3.30	11.5	-6	0.6	8	1.02	2.24	6.36	2	1.1
1.75	0.83	2.61	10.5	-19	0.3	4	0.64	1.69	5.70	-4	0.7	9	0.52	1.10	3.04	3	1.2
2	1.33	4.09	16.1	-16	0.3	5	1.81	4.48	14.3	-2	0.8	10	1.89	3.91	10.6	3	1.4
2.5	0.50	1.47	5.54	-11	0.5	6	0.82	1.94	5.90	0	0.9						
3	0.66	1.85	6.71	-8	0.6	7	1.29	2.91	8.54	1	1.0						