Reaction : ^{27}Al(p,α)^{24}Mg

A total of 78 resonances at energies below 3064.6 keV are included in the calculation of the rates. The adopted strengths for the first 20 resonances below 900 keV are shown in the table. The adopted resonance parameters for $E > 900$ keV are the weighted averages of the data reported by AN61, AB63, AW65, NE84 and CO92 for the (p,α_0) channel, and by TV72, DA73, ME75 and NE84 for the (p,α_1) channel. Tail contributions are also included. The available data allow the rates to be calculated for $T_9 \leq 6$. Above $T_9 = 6$, HF estimates are used (see Sect. 2.5). The large differences between the present rates and the CA88 ones below $T_9 = 0.6$ are mainly due to the adoption by CA88 of a strength for the $E_r = 215$ keV resonance which exceeds the upper limit of TI88. Below $T_9 = 0.05$, the difference is due to updated upper limits of resonance strengths that were not available to CA88. Above $T_9 = 4$, thermalization effects account for about 30% of the differences.

E_r (keV)	J^π	adopted $\omega\gamma$ (eV)	Ref.	
71.9 ± 0.5	2^+	$(0.6^{+5.4}_{-0.6}) \times 10^{-15}$	CH88, CH97	I
84.8 ± 0.4	1^-	$(0.1^{+0.9}_{-0.1}) \times 10^{-15}$	CH88, CH97	M
195.5 ± 0.9	2^+	$(1.30^{+1.20}_{-1.29}) \times 10^{-8}$	SM62, MA78d, CH88	I
214.7 ± 0.4		$(0.18^{+1.72}_{-0.18}) \times 10^{-7}$	CH88, TI88	M
282.1 ± 0.4	4^+	$(0.11^{+0.99}_{-0.11}) \times 10^{-6}$	CH88, TI88	I
314.8 ± 0.4		$(1.10^{+0.70}_{-0.78}) \times 10^{-6}$	CH88, TI88	M
390.9 ± 0.3		$(1.25 \pm 0.75) \times 10^{-5}$	MA78d, CH88, EN90	M
486.72 ± 0.07	2^+	0.10 ± 0.02	AN61, KU63, MA78d, CH88, TI88, EN90	M
488.15 ± 0.07	2	$(0.2^{+1.8}_{-0.2}) \times 10^{-2}$	AN61, KU63, MA78d, CH88, TI88, EN90	M
609.47 ± 0.04	3^-	0.28 ± 0.05	AN61, KU63, MA78d, CH88, TI88, EN90	M
631.08 ± 0.04	2^-	$(0.20^{+1.8}_{-0.2}) \times 10^{-3}$	AN61, KU63, MA78d, CH88, TI88, EN90	M
654.85 ± 0.04	3^+	$(1.80 \pm 1.6) \times 10^{-3}$	CH88, EN90	M
705.06 ± 0.04	2^+	0.53 ± 0.1	AN61, KU63, MA78d, CH88, TI88, EN90	M
709.97 ± 0.04		$(0.20^{+1.8}_{-0.2}) \times 10^{-3}$	AN61, KU63, MA78d, CH88, TI88, EN90	M
716.21 ± 0.04		$(0.10^{+0.9}_{-0.1}) \times 10^{-2}$	AN61, KU63, MA78d, CH88, TI88, EN90	M
733.02 ± 0.04	2^-	$(0.10^{+0.9}_{-0.1}) \times 10^{-2}$	AN61, KU63, MA78d, CH88, TI88, EN90	M
739.56 ± 0.04	4^+	$(0.10^{+0.9}_{-0.1}) \times 10^{-2}$	AN61, KU63, MA78d, CH88, TI88, EN90	M
745.79 ± 0.04		$(0.10^{+0.9}_{-0.1}) \times 10^{-2}$	AN61, KU63, MA78d, CH88, TI88, EN90	M
855.82 ± 0.05	2^+	0.83 ± 0.20	AN61	M
889.73 ± 0.05		0.33 ± 0.09	AN61	M
Res. 903.5 – 3065 keV		see comments		

T_9	low	adopt	high	exp	ratio	T_9	low	adopt	high	exp	ratio	T_9	low	adopt	high	exp	ratio
0.025	2E-5	7.80	78.0	-23	0.05	0.16	0.19	3.14	12.6	-8	1E-4	1.25	6.92	8.17	9.69	2	1.0
0.03	2E-6	1.55	15.5	-20	0.05	0.18	0.12	1.41	5.89	-7	1E-4	1.5	2.49	2.87	3.30	3	1.2
0.04	2E-6	1.05	10.5	-17	0.04	0.2	1.08	5.45	21.3	-7	1E-4	1.75	6.98	7.93	8.96	3	1.4
0.05	2E-5	4.92	49.2	-16	0.04	0.25	1.65	2.46	4.66	-5	6E-4	2	1.60	1.81	2.03	4	1.6
0.06	5E-4	6.07	60.7	-15	0.03	0.3	5.39	7.03	10.2	-4	4E-3	2.5	5.56	6.25	6.95	4	1.8
0.07	7E-3	3.63	35.6	-14	0.01	0.35	6.44	8.24	11.4	-3	0.02	3	1.34	1.50	1.67	5	1.9
0.08	0.03	1.78	14.1	-13	1E-3	0.4	4.10	5.22	7.10	-2	0.05	3.5	2.57	2.89	3.21	5	1.9
0.09	0.06	1.32	6.17	-12	4E-4	0.45	1.73	2.19	2.96	-1	0.1	4	4.23	4.76	5.30	5	1.9
0.1	0.07	1.14	3.93	-11	2E-4	0.5	5.45	6.91	9.26	-1	0.2	5	8.59	9.69	10.8	5	1.6
0.11	0.49	7.64	25.2	-11	2E-4	0.6	3.10	3.91	5.18	0	0.5	6	1.37	1.55	1.73	6	1.3
0.12	0.24	3.80	13.0	-10	2E-4	0.7	1.10	1.39	1.81	1	0.8	7	2.52	2.90	3.28	6	1.4
0.13	0.09	1.48	5.29	-9	1E-4	0.8	2.99	3.73	4.82	1	0.9	8	4.10	4.82	5.53	6	1.5
0.14	0.29	4.74	17.7	-9	1E-4	0.9	6.88	8.52	10.8	1	0.9	9	6.14	7.33	8.52	6	1.5
0.15	0.08	1.30	5.05	-8	1E-4	1	1.43	1.75	2.18	2	0.9	10	0.86	1.04	1.23	7	1.4