Reaction: ^{22}Ne(α,γ)^{26}Mg

The contribution of 31 resonances in the energy region between E_r = 500.8 and 1728.4 keV is calculated using the resonance strengths reported by WO89. For the low energy resonances at E_r = 82 and 338 keV, the values from GI93 are adopted. The angular distribution in GI93 suggests that $J^\pi = 3^-$ for the resonance at E_r = 338 keV, but the values $J^\pi = 2^+$ and 4^+ cannot be excluded. The adopted value for $\omega\gamma$ corresponds to $J^\pi = 3^-$, the other two J^π values being used for the upper and lower limits of the rates, respectively. The contributions of the direct capture process and of the tails of the broad resonances at E_r = 700, 1213 and 1280 keV are calculated using the S-factors of WO89. Above T_9 = 1.25, the rates are calculated using HF rates as explained in Sect. 2.5. The large differences between our rates and the CA88 ones at $0.3 \leq T_9 \leq 1$, are due to the differences between the WO89 data and the theoretical estimate used by CA88. For $T_9 \geq 1.25$, the HF rates are lower than the CA88 estimate.

E_r (keV)	J^π	$\omega\gamma$ (eV)		E_r (keV)	J^π	$\omega\gamma$ (eV)	
		adopt [GI93]				adopt [WO89]	
82	$4^+(7^-,8^+)$	$5.2^{+2.1\times10^5}_{-4.9} \times 10^{-47}$	N	718.3 ± 1.7	1^-	$4.7^{+42}_{-4.7} \times 10^{-7}$	M
338.4 ± 1.7	$(3^-,2^+,4^+)$	$1.4^{+11.6}_{-1.4} \times 10^{-13}$	I	732.6 ± 1.7		$4.7^{+42}_{-4.7} \times 10^{-7}$	M
		adopt [WO89]					
500.8 ± 1.7	2^+	$1.1^{+9.9}_{-1.1} \times 10^{-11}$	M	1011.0 ± 8.5		$5.9^{+53}_{-5.9} \times 10^{-7}$	M
541.4 ± 1.7	2^+	$8.5^{+77}_{-8.5} \times 10^{-9}$	M	1040.6 ± 8.5		$5.9^{+53}_{-5.9} \times 10^{-7}$	M
		$9.7^{+87}_{-9.7} \times 10^{-9}$ [GI93]		1180.2 ± 8.5		$8.5^{+76}_{-8.5} \times 10^{-6}$	M
551.6 ± 1.7	0^+	$1.0^{+9.0}_{-1.0} \times 10^{-9}$	M	1186.1 ± 5.1		$8.5^{+76}_{-8.5} \times 10^{-6}$	M
559.2 ± 1.7	0^+	$5.2^{+47}_{-5.2} \times 10^{-9}$	M	1213.2 ± 2.5	$1^-,2^+,3^-$	$(2.11 \pm 0.35) \times 10^{-3}$	M
560.0 ± 1.7	2^+	$1.2^{+11}_{-1.2} \times 10^{-8}$	M	1265.6 ± 4.2		$6.8^{+61}_{-6.8} \times 10^{-6}$	M
571.9 ± 1.7	1^-	$1.9^{+17}_{-1.9} \times 10^{-7}$	M	1280.0 ± 4.2	$1^-,2^+,3^-$	$(1.69 \pm 0.17) \times 10^{-3}$	M
577.8 ± 1.7	1^-	$1.9^{+17}_{-1.9} \times 10^{-7}$	M	1296.9 ± 2.5	$1^-,2^+$	$(1.15 \pm 0.34) \times 10^{-3}$	M
632.8 ± 1.7	1^-	$3.6^{+32}_{-3.6} \times 10^{-7}$	M	1338.4 ± 2.5	$2^+,3^-,4^+$	$(1.15 \pm 0.34) \times 10^{-3}$	M
664.1 ± 1.7	1^-	$4.0^{+36}_{-4.0} \times 10^{-7}$	M	1436.5 ± 2.5	$2^+,3^-$	$(5.08 \pm 0.59) \times 10^{-3}$	M
669.2 ± 1.7	1^-	$4.0^{+36}_{-4.0} \times 10^{-7}$	M	1501.7 ± 6.8	(0^+)	$1.9^{+17}_{-1.9} \times 10^{-5}$	M
676.0 ± 1.7	1^-	$4.0^{+36}_{-4.0} \times 10^{-7}$	M	1524.5 ± 2.5		$(0.85 \pm 0.17) \times 10^{-3}$	M
677.9 ± 1.7	1^-	$4.0^{+36}_{-4.0} \times 10^{-7}$	M	1569.4 ± 6.8	(0^+)	$(0.93 \pm 0.17) \times 10^{-3}$	M
683.6 ± 1.7	3^-	$5.8^{+52}_{-5.8} \times 10^{-9}$	M	1658.2 ± 6.8	(0^+)	$(7.52 \pm 0.85) \times 10^{-3}$	M
700.5 ± 4.2	1^-	$(30.4 \pm 3.4) \times 10^{-6}$	M	1728.4 ± 4.2	0^+	$(45.7 \pm 5.9) \times 10^{-3}$	M

T_9	low	adopt	high	exp	ratio	T_9	low	adopt	high	exp	ratio	T_9	low	adopt	high	exp	ratio
0.1	0.67	9.90	113	-25	0.7	0.4	3.49	7.89	42.1	-9	14	2.5	1.66	2.33	4.12	0	1.2
0.11	0.21	3.05	34.3	-23	1.0	0.45	2.84	5.56	25.4	-8	23	3	0.74	1.07	1.94	1	1.0
0.12	0.37	5.24	58.1	-22	1.1	0.5	1.49	2.67	10.8	-7	39	3.5	2.34	3.44	6.42	1	0.9
0.13	0.41	5.77	63.2	-21	1.1	0.6	1.74	2.80	9.49	-6	110	4	5.83	8.84	16.9	1	0.8
0.14	0.32	4.52	49.1	-20	1.0	0.7	0.99	1.49	4.48	-5	100	5	2.29	3.69	7.46	2	0.7
0.15	0.19	2.73	29.5	-19	0.8	0.8	3.69	5.30	14.4	-5	46	6	0.59	1.02	2.19	3	0.6
0.16	0.09	1.38	15.0	-18	0.7	0.9	1.08	1.49	3.65	-4	21	7	1.14	2.17	4.95	3	0.6
0.18	0.13	2.96	32.8	-17	0.7	1	2.73	3.63	7.95	-4	11	8	1.78	3.83	9.32	3	0.6
0.2	0.22	6.04	66.5	-16	1.0	1.25	1.81	2.41	4.02	-3	3.4	9	2.36	5.92	15.5	3	0.5
0.25	0.34	3.12	30.1	-13	2.9	1.5	1.17	1.57	2.64	-2	2.1	10	2.67	8.31	23.4	3	0.5
0.3	0.59	2.56	20.3	-11	5.6	1.75	5.60	7.61	13.0	-2	1.7						
0.35	2.30	6.58	42.3	-10	9.2	2	2.11	2.90	5.01	-1	1.4						