Reaction : ^{22}Na(p,γ)^{23}Mg

The rate contribution of 21 resonances between E_r = 2.6 and 1213.6 keV is considered. The adopted resonance strengths come from the reported values of GÖ89a, SE90, SC95b and ST96b. The resonance energies are taken from SE90 and SC95b. For the lowest 3 resonances, only lower and upper limits of the strength are determined. The adopted values are averages of these limits. For the resonances at E_r = 215.6 and 273.6 keV, the values of ST96b are selected because of their measurement of some new γ-branching ratios. The direct capture contribution is calculated using the S-factor of SE90 and is found to be negligible. For the resonances analyzed by transfer reaction [SC95b], the energy dependence of the penetration factor is also taken into account. Above T_9 = 1, the rates are calculated using HF rates (see Sect. 2.5). The large differences between the present rates and the CA88 ones are due to the estimated resonance strengths [WI86] used by CA88.

E_r (keV)	J^π	$\omega\gamma$ (meV)						
		GÖ89a	SE90	SC95b		ST96b	adopt	
				low	high			
2.6 ± 6.0	$5/2^+$			0	1.3×10^{-63}		$1.4^{+13}_{-1.4} \times 10^{-64}$	N
41.6 ± 8.0	$(7/2,9/2)^+$			1.7×10^{-14}	2.7×10^{-12}		$7.2^{+20}_{-7.0} \times 10^{-13}$	I
61.6 ± 8.0	$3/2^+, 5/2^+$			5.8×10^{-11}	1.5×10^{-8}		$2.9^{+12}_{-2.8} \times 10^{-9}$	I
204.1 ± 2.3	$1/2^+ - 11/2^+, 5/2^- - 7/2^-$		≤ 0.36	0.33	22	1.8 ± 0.7	1.8 ± 0.7	I
215.6 ± 6.0	$5/2^+$		≤ 1.3	0.05	29	≤ 2.6	$2.6^{+23}_{-2.6} \times 10^{-1}$	M
274.0 ± 6.0	$(7/2,9/2)^+$		14 ± 3	1	58	15.8 ± 3.4	15.8 ± 3.4	M
436.6 ± 6.0	$3/2^-$	≤ 18	68 ± 20				68 ± 20	M
478.6 ± 7.0	$5/2^-$	≤ 39	37 ± 12				37 ± 12	M
496.3 ± 8.0	$5/2^+$	≤ 44	≤ 7.5				$7.5^{+67}_{-7.5} \times 10^{-1}$	M
575.6 ± 6.0	$3/2^+$	≤ 50	≤ 8.3				$8.3^{+75}_{-8.3} \times 10^{-1}$	M
585.1 ± 1.6	$5/2^+$	≤ 38	235 ± 33				235 ± 33	M
613.6 ± 8.0	$7/2^-$	≤ 36	≤ 8.9				$8.9^{+80}_{-8.9} \times 10^{-1}$	M
705.6 ± 8.0		≤ 74	364 ± 60				364 ± 60	M
754.6 ± 8.0		≤ 83	95 ± 30				95 ± 30	M
813.6 ± 6.0		≤ 90	≤ 20				2^{+18}_{-2}	M
840.6 ± 6.0		≤ 140	≤ 20				2^{+18}_{-2}	M
873.6 ± 5.0	$(3/2 - 13/2)^+$	≤ 99	≤ 21				$2.1^{+19}_{-2.1}$	M
977.6 ± 6.0		≤ 97	≤ 15				$1.5^{+13}_{1.5}$	M
1037.6 ± 6.0		≤ 79	≤ 44				$4.4^{+40}_{-4.4}$	M
1178.6 ± 6.0		≤ 87	≤ 51				$5.1^{+46}_{-5.1}$	M
1213.6 ± 8.0		≤ 69	≤ 51				$5.1^{+46}_{-5.1}$	M

T_9	low	adopt	high	exp	ratio	T_9	low	adopt	high	exp	ratio	T_9	low	adopt	high	exp	ratio
0.012	0.01	2.90	52.1	-25	12	0.12	0.98	1.91	4.96	-5	0.1	1	2.16	2.81	4.11	2	0.1
0.013	0.03	5.68	58.2	-24	7.4	0.13	4.07	7.79	19.9	-5	0.1	1.25	4.67	6.32	9.62	2	0.1
0.014	0.06	7.21	50.7	-23	4.9	0.14	1.37	2.59	6.55	-4	0.1	1.5	0.80	1.12	1.77	3	0.1
0.015	0.06	6.48	35.7	-22	3.4	0.15	3.93	7.33	18.4	-4	0.1	1.75	1.19	1.73	2.81	3	0.1
0.016	0.05	4.40	21.0	-21	2.4	0.16	0.99	1.82	4.52	-3	0.1	2	1.61	2.43	4.06	3	0.1
0.018	0.01	1.06	4.71	-19	1.4	0.18	4.57	8.23	20.1	-3	0.1	2.5	2.48	4.00	7.04	3	0.1
0.02	0.02	1.36	6.63	-18	0.8	0.2	1.57	2.76	6.61	-2	0.1	3	3.34	5.72	10.5	3	0.1
0.025	0.01	1.61	12.0	-16	0.4	0.25	1.48	2.45	5.55	-1	0.1	3.5	4.13	7.51	14.3	3	0.1
0.03	0.07	6.15	52.1	-15	0.4	0.3	0.67	1.07	2.28	0	0.1	4	4.84	9.31	18.3	3	0.1
0.04	0.01	1.06	9.35	-12	0.6	0.35	2.02	3.08	6.22	0	0.1	5	0.61	1.29	2.66	4	0.1
0.05	0.02	2.57	30.2	-11	0.7	0.4	4.64	6.86	13.2	0	0.1	6	0.71	1.65	3.53	4	0.1
0.06	0.02	2.09	32.6	-10	0.8	0.45	0.89	1.28	2.37	1	0.1	7	0.79	2.00	4.42	4	0.1
0.07	0.21	9.36	180	-10	0.6	0.5	1.50	2.13	3.79	1	0.1	8	0.85	2.34	5.32	4	0.1
0.08	0.86	4.40	68.6	-9	0.2	0.6	3.38	4.66	7.81	1	0.1	9	0.91	2.68	6.23	4	0.1
0.09	1.95	4.57	27.4	-8	0.1	0.7	6.22	8.42	13.5	1	0.1	10	0.95	3.02	7.15	4	0.1
0.1	2.37	4.86	15.9	-7	0.1	0.8	1.02	1.35	2.09	2	0.1						
0.11	1.82	3.59	9.83	-6	0.2	0.9	1.53	2.01	3.01	2	0.1						