Target levels of Ca XV and their threshold energies (in Ryd).

Index	Configuration	Level	Expt.[a]	GRASP[b]
1	$1s^2 2s^2 2p^2$	$^3P_0$	0.0000	0.0000
2	$1s^2 2s^2 2p^2$	$^3P_1$	0.1600	0.1601
3	$1s^2 2s^2 2p^2$	$^3P_2$	0.3273	0.3281
4	$1s^2 2s^2 2p^2$	$^1D_2$	0.9896	1.0138
5	$1s^2 2s^2 2p^2$	$^1S_0$	1.8009	1.7695
6	$1s^2 2s 2p^3$	$^5S_2^o$	2.4985	2.3928
7	$1s^2 2s 2p^3$	$^3D_2^o$	4.5261	4.5364
8	$1s^2 2s 2p^3$	$^3D_1^o$	4.5344	4.5456
9	$1s^2 2s 2p^3$	$^3D_3^o$	4.5585	4.5677
10	$1s^2 2s 2p^3$	$^3P_0^o$	5.3011	5.3144
11	$1s^2 2s 2p^3$	$^3P_1^o$	5.3112	5.3246
12	$1s^2 2s 2p^3$	$^3P_2^o$	5.3369	5.3500
13	$1s^2 2s 2p^3$	$^3S_1^o$	6.6423	6.7940
14	$1s^2 2s 2p^3$	$^1D_2^o$	6.6497	6.7971
15	$1s^2 2s 2p^3$	$^1P_1^o$	7.4211	7.5695
16	$1s^2 2p^4$	$^3P_2$	10.0929	10.2321
17	$1s^2 2p^4$	$^3P_1$	10.3326	10.4681
18	$1s^2 2p^4$	$^3P_0$	10.3897	10.5269
19	$1s^2 2p^4$	$^1D_2$	10.8915	11.1048
20	$1s^2 2p^4$	$^1S_0$	12.3397	12.5692
21	$1s^2 2s^2 2p 3s$	$^3P_0^o$	.....	37.4440
22	$1s^2 2s^2 2p 3s$	$^3P_1^o$	.....	37.4905
23	$1s^2 2s^2 2p 3s$	$^3P_2^o$	.....	37.7821
24	$1s^2 2s^2 2p 3s$	$^1P_1^o$	.....	37.9481
25	$1s^2 2s^2 2p 3p$	$^3D_1$	.....	38.5909
26	$1s^2 2s^2 2p 3p$	$^3D_2$	.....	38.8009
27	$1s^2 2s^2 2p 3p$	$^1P_1$	.....	38.8099
28	$1s^2 2s^2 2p 3p$	$^3D_3$	.....	39.0419
29	$1s^2 2s^2 2p 3p$	$^3S_1$	.....	39.0900
30	$1s^2 2s^2 2p 3p$	$^3P_0$	.....	39.1045
31	$1s^2 2s^2 2p 3p$	$^3P_1$	.....	39.2720
32	$1s^2 2s^2 2p 3p$	$^3P_2$	.....	39.3384
33	$1s^2 2s^2 2p 3p$	$^1D_2$	.....	39.6112
34	$1s^2 2s^2 2p 3d$	$^3F_2^o$	39.7586	39.9877
35	$1s^2 2s^2 2p 3p$	$^1S_0$	.....	40.0342
36	$1s^2 2s^2 2p 3d$	$^3F_3^o$	39.9044	40.1271
37	$1s^2 2s^2 2p 3d$	$^1D_2^o$	.....	40.1990
38	$1s^2 2s^2 2p 3d$	$^3F_4^o$	.....	40.3352
39	$1s^2 2s^2 2p 3d$	$^3D_1^o$	40.0866	40.3696
40	$1s^2 2s^2 2p 3d$	$^3D_2^o$	40.2051	40.4639
41	$1s^2 2s^2 2p 3d$	$^3D_3^o$	40.3327	40.5833
42	$1s^2 2s^2 2p 3d$	$^3P_2^o$	40.4147	40.6537
43	$1s^2 2s^2 2p 3d$	$^3P_1^o$	40.4147	40.6719
44	$1s^2 2s^2 2p 3d$	$^3P_0^o$	.....	40.6853
45	$1s^2 2s^2 2p 3d$	$^1P_1^o$	40.7610	41.0566
46	$1s^2 2s^2 2p 3d$	$^1F_3^o$	40.7792	41.0685

a. Sugar & Corliss ([**?**]).

b. Aggarwal et al. ([**?**]).

Comparison between present (RM1) and earlier (RM2: Aggarwal [**?**]) results of effective collision strengths for transitions within the levels of the ($1s^2 2s^2 2p^2$) ground configuration of Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

log T_e		5.0	5.0	6.0	6.0	7.0	7.0 K
Transition	I–J	RM1	RM2	RM1	RM2	RM1	RM2
$^3P_0$–$^3P_1$	1–2	2.387-1	1.679-1	1.258-1	1.743-1	3.885-2	3.872-2
$^3P_0$–$^3P_2$	1–3	6.914-2	1.211-1	5.799-2	2.430-1	2.780-2	5.157-2
$^3P_0$–$^1D_2$	1–4	4.855-2	4.178-2	2.573-2	2.187-2	1.225-2	7.742-3
$^3P_0$–$^1S_0$	1–5	8.017-3	1.327-2	5.628-3	7.203-3	3.231-3	1.493-3
$^3P_1$–$^3P_2$	2–3	3.911-1	5.386-1	4.647-1	8.777-1	1.372-1	1.911-1
$^3P_1$–$^1D_2$	2–4	1.665-1	1.555-1	9.944-2	9.186-2	4.981-2	3.181-2
$^3P_1$–$^1S_0$	2–5	2.269-2	3.104-2	1.822-2	1.797-2	1.041-2	4.974-3
$^3P_2$–$^1D_2$	3–4	3.926-1	3.899-1	2.455-1	3.602-1	1.102-1	1.001-1
$^3P_2$–$^1S_0$	3–5	2.339-2	4.975-2	2.262-2	3.220-2	1.462-2	9.405-3

Table 3. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$)

Transition		Temperature (log K)										
I	J	5.20	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
1	2	2.387-1	2.253-1	2.055-1	1.805-1	1.525-1	1.258-1	1.031-1	8.389-2	6.691-2	5.179-2	3.885-2
1	3	6.914-2	7.398-2	7.490-2	7.173-2	6.535-2	5.799-2	5.113-2	4.479-2	3.863-2	3.284-2	2.780-2
1	4	4.855-2	4.349-2	3.834-2	3.318-2	2.874-2	2.573-2	2.378-2	2.180-2	1.906-2	1.570-2	1.225-2
1	5	8.017-3	7.869-3	7.321-3	6.512-3	5.845-3	5.628-3	5.693-3	5.603-3	5.083-3	4.210-3	3.231-3
1	6	2.562-2	2.405-2	2.113-2	1.759-2	1.419-2	1.133-2	9.070-3	7.312-3	5.903-3	4.728-3	3.718-3
1	7	1.188-2	1.035-2	8.866-3	7.580-3	6.537-3	5.707-3	5.020-3	4.407-3	3.816-3	3.225-3	2.641-3
1	8	2.167-1	2.167-1	2.173-1	2.190-1	2.222-1	2.277-1	2.357-1	2.471-1	2.629-1	2.837-1	3.074-1
1	9	1.102-2	8.428-3	6.189-3	4.394-3	3.043-3	2.074-3	1.402-3	9.429-4	6.314-4	4.205-4	2.787-4
1	10	6.553-4	5.995-4	5.400-4	4.830-4	4.334-4	3.910-4	3.526-4	3.143-4	2.740-4	2.318-4	1.893-4
1	11	1.025-1	1.029-1	1.034-1	1.042-1	1.057-1	1.082-1	1.118-1	1.170-1	1.243-1	1.338-1	1.447-1
1	12	2.178-3	2.063-3	1.874-3	1.666-3	1.477-3	1.314-3	1.171-3	1.034-3	8.967-4	7.567-4	6.178-4
1	13	1.003-1	1.007-1	1.013-1	1.022-1	1.036-1	1.058-1	1.090-1	1.137-1	1.203-1	1.289-1	1.387-1
1	14	2.257-3	2.216-3	2.171-3	2.125-3	2.076-3	2.011-3	1.913-3	1.773-3	1.589-3	1.372-3	1.137-3
1	15	6.011-4	6.032-4	6.026-4	6.029-4	6.026-4	5.951-4	5.750-4	5.396-4	4.907-4	4.333-4	3.733-4
1	16	1.031-3	1.040-3	1.074-3	1.129-3	1.172-3	1.184-3	1.158-3	1.100-3	1.022-3	9.395-4	8.624-4
1	17	6.625-5	1.142-4	2.137-4	3.457-4	4.548-4	5.125-4	5.170-4	4.707-4	3.890-4	2.967-4	2.131-4
1	18	4.880-4	5.506-4	6.580-4	7.884-4	8.928-4	9.603-4	9.889-4	9.571-4	8.641-4	7.386-4	6.105-4
1	19	1.118-4	1.460-4	2.272-4	3.383-4	4.266-4	4.678-4	4.624-4	4.158-4	3.428-4	2.630-4	1.913-4
1	20	2.062-4	2.930-4	4.099-4	5.149-4	5.626-4	5.575-4	5.159-4	4.443-4	3.551-4	2.663-4	1.904-4
1	21	7.455-3	6.595-3	5.386-3	4.146-3	3.069-3	2.226-3	1.603-3	1.156-3	8.369-4	6.056-4	4.358-4
1	22	4.213-2	3.874-2	3.238-2	2.516-2	1.864-2	1.347-2	9.750-3	7.258-3	5.738-3	4.966-3	4.738-3
1	23	1.432-2	1.164-2	8.948-3	6.548-3	4.618-3	3.181-3	2.165-3	1.466-3	9.931-4	6.730-4	4.557-4
1	24	2.298-2	1.800-2	1.362-2	9.862-3	6.891-3	4.698-3	3.162-3	2.124-3	1.440-3	9.986-4	7.208-4
1	25	3.798-2	3.265-2	2.568-2	1.913-2	1.384-2	9.922-3	7.133-3	5.169-3	3.774-3	2.761-3	2.010-3
1	26	1.120-2	9.737-3	8.180-3	6.772-3	5.645-3	4.815-3	4.241-3	3.869-3	3.659-3	3.584-3	3.596-3
1	27	7.587-2	5.784-2	4.157-2	2.887-2	1.971-2	1.340-2	9.137-3	6.285-3	4.361-3	3.044-3	2.126-3
1	28	3.289-3	2.844-3	2.324-3	1.839-3	1.439-3	1.132-3	8.981-4	7.172-4	5.713-4	4.494-4	3.462-4
1	29	1.014-1	6.526-2	4.194-2	2.693-2	1.732-2	1.117-2	7.236-3	4.718-3	3.095-3	2.042-3	1.352-3
1	30	3.895-2	3.658-2	3.385-2	3.136-2	2.940-2	2.805-2	2.726-2	2.692-2	2.696-2	2.726-2	2.756-2
1	31	3.809-3	3.329-3	2.799-3	2.315-3	1.918-3	1.603-3	1.351-3	1.140-3	9.517-4	7.791-4	6.207-4
1	32	6.079-3	5.077-3	4.065-3	3.201-3	2.532-3	2.037-3	1.675-3	1.406-3	1.199-3	1.038-3	9.092-4
1	33	3.592-3	2.923-3	2.327-3	1.845-3	1.478-3	1.202-3	9.911-4	8.202-4	6.743-4	5.454-4	4.314-4
1	34	9.570-3	8.248-3	7.191-3	6.366-3	5.696-3	5.104-3	4.527-3	3.932-3	3.314-3	2.696-3	2.110-3
1	35	5.738-4	4.767-4	3.946-4	3.304-4	2.819-4	2.450-4	2.153-4	1.898-4	1.664-4	1.447-4	1.247-4
1	36	6.267-3	5.582-3	5.088-3	4.732-3	4.467-3	4.261-3	4.093-3	3.960-3	3.870-3	3.833-3	3.831-3
1	37	9.163-3	8.294-3	7.650-3	7.132-3	6.657-3	6.161-3	5.603-3	4.964-3	4.254-3	3.511-3	2.784-3
1	38	1.220-3	1.171-3	1.125-3	1.078-3	1.024-3	9.589-4	8.775-4	7.792-4	6.673-4	5.491-4	4.335-4
1	39	7.472-2	7.523-2	7.593-2	7.693-2	7.850-2	8.104-2	8.512-2	9.143-2	1.006-1	1.131-1	1.283-1
1	40	2.506-3	2.460-3	2.403-3	2.329-3	2.228-3	2.093-3	1.919-3	1.705-3	1.461-3	1.203-3	9.504-4
1	41	1.628-3	1.599-3	1.567-3	1.527-3	1.476-3	1.411-3	1.327-3	1.228-3	1.118-3	1.007-3	9.008-4
1	42	7.299-4	7.022-4	6.751-4	6.463-4	6.128-4	5.716-4	5.208-4	4.604-4	3.927-4	3.221-4	2.538-4
1	43	1.145-3	1.126-3	1.109-3	1.093-3	1.076-3	1.058-3	1.040-3	1.026-3	1.019-3	1.028-3	1.052-3
1	44	3.238-4	3.151-4	3.064-4	2.966-4	2.844-4	2.685-4	2.480-4	2.226-4	1.931-4	1.612-4	1.291-4
1	45	1.395-3	1.389-3	1.382-3	1.370-3	1.354-3	1.334-3	1.313-3	1.297-3	1.293-3	1.311-3	1.351-3
1	46	1.847-3	1.826-3	1.793-3	1.744-3	1.671-3	1.571-3	1.439-3	1.275-3	1.089-3	8.919-4	7.004-4

Table 3. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
2	3	3.911-1	4.870-1	5.740-1	5.961-1	5.482-1	4.647-1	3.776-1	3.003-1	2.346-1	1.804-1	1.372-1
2	4	1.665-1	1.534-1	1.391-1	1.235-1	1.093-1	9.944-2	9.326-2	8.660-2	7.650-2	6.348-2	4.981-2
2	5	2.269-2	2.215-2	2.107-2	1.954-2	1.834-2	1.822-2	1.861-2	1.823-2	1.642-2	1.355-2	1.041-2
2	6	6.825-2	6.352-2	5.624-2	4.756-2	3.913-2	3.196-2	2.624-2	2.176-2	1.817-2	1.519-2	1.266-2
2	7	4.898-1	4.847-1	4.812-1	4.807-1	4.848-1	4.946-1	5.105-1	5.341-1	5.676-1	6.119-1	6.629-1
2	8	9.775-2	9.352-2	8.961-2	8.660-2	8.484-2	8.446-2	8.543-2	8.783-2	9.189-2	9.769-2	1.045-1
2	9	3.796-2	3.070-2	2.416-2	1.869-2	1.442-2	1.123-2	8.887-3	7.119-3	5.723-3	4.566-3	3.582-3
2	10	1.440-1	1.447-1	1.456-1	1.469-1	1.491-1	1.527-1	1.578-1	1.652-1	1.754-1	1.890-1	2.043-1
2	11	1.919-1	1.925-1	1.932-1	1.946-1	1.972-1	2.016-1	2.081-1	2.176-1	2.309-1	2.485-1	2.684-1
2	12	7.845-2	7.842-2	7.814-2	7.799-2	7.837-2	7.951-2	8.159-2	8.485-2	8.962-2	9.601-2	1.033-1
2	13	3.133-1	3.145-1	3.163-1	3.191-1	3.236-1	3.304-1	3.406-1	3.554-1	3.762-1	4.033-1	4.339-1
2	14	1.077-2	1.029-2	9.844-3	9.469-3	9.151-3	8.837-3	8.466-3	7.997-3	7.425-3	6.780-3	6.099-3
2	15	1.514-2	1.522-2	1.531-2	1.543-2	1.561-2	1.585-2	1.618-2	1.664-2	1.728-2	1.814-2	1.911-2
2	16	2.389-3	2.427-3	2.607-3	2.925-3	3.225-3	3.385-3	3.375-3	3.196-3	2.903-3	2.575-3	2.270-3
2	17	2.230-3	2.422-3	2.770-3	3.186-3	3.500-3	3.663-3	3.676-3	3.505-3	3.170-3	2.759-3	2.353-3
2	18	1.002-4	1.563-4	2.669-4	4.088-4	5.221-4	5.771-4	5.738-4	5.174-4	4.258-4	3.248-4	2.342-4
2	19	4.633-4	5.716-4	8.353-4	1.203-3	1.501-3	1.652-3	1.654-3	1.514-3	1.271-3	9.947-4	7.392-4
2	20	4.718-4	6.985-4	1.046-3	1.394-3	1.576-3	1.583-3	1.461-3	1.244-3	9.799-4	7.234-4	5.084-4
2	21	3.310-2	2.854-2	2.285-2	1.730-2	1.266-2	9.157-3	6.725-3	5.181-3	4.338-3	4.051-3	4.177-3
2	22	8.352-2	6.976-2	5.460-2	4.061-2	2.919-2	2.062-2	1.455-2	1.042-2	7.716-3	6.026-3	5.047-3
2	23	2.609-1	2.020-1	1.477-1	1.037-1	7.100-2	4.792-2	3.231-2	2.208-2	1.561-2	1.173-2	9.610-3
2	24	1.505-1	1.077-1	7.539-2	5.170-2	3.487-2	2.328-2	1.548-2	1.032-2	6.943-3	4.740-3	3.313-3
2	25	3.854-2	3.286-2	2.626-2	2.019-2	1.532-2	1.170-2	9.110-3	7.291-3	6.018-3	5.131-3	4.507-3
2	26	4.047-2	3.342-2	2.657-2	2.064-2	1.594-2	1.240-2	9.790-3	7.847-3	6.359-3	5.189-3	4.252-3
2	27	8.378-2	6.687-2	5.126-2	3.864-2	2.925-2	2.263-2	1.813-2	1.512-2	1.316-2	1.189-2	1.105-2
2	28	2.255-2	1.960-2	1.630-2	1.323-2	1.072-2	8.830-3	7.459-3	6.492-3	5.828-3	5.399-3	5.132-3
2	29	9.711-2	7.136-2	5.232-2	3.851-2	2.879-2	2.217-2	1.775-2	1.485-2	1.299-2	1.180-2	1.099-2
2	30	7.330-3	6.350-3	5.325-3	4.402-3	3.646-3	3.049-3	2.569-3	2.165-3	1.805-3	1.474-3	1.172-3
2	31	9.221-2	8.587-2	7.964-2	7.436-2	7.043-2	6.784-2	6.642-2	6.595-2	6.623-2	6.706-2	6.779-2
2	32	2.516-2	2.138-2	1.743-2	1.395-2	1.118-2	9.084-3	7.510-3	6.300-3	5.335-3	4.546-3	3.888-3
2	33	1.825-2	1.503-2	1.205-2	9.605-3	7.721-3	6.304-3	5.218-3	4.347-3	3.608-3	2.962-3	2.394-3
2	34	1.647-2	1.432-2	1.266-2	1.140-2	1.043-2	9.640-3	8.943-3	8.302-3	7.718-3	7.222-3	6.816-3
2	35	1.905-3	1.599-3	1.342-3	1.139-3	9.807-4	8.535-4	7.432-4	6.396-4	5.382-4	4.389-4	3.452-4
2	36	1.651-2	1.476-2	1.335-2	1.220-2	1.121-2	1.026-2	9.280-3	8.222-3	7.103-3	5.976-3	4.909-3
2	37	5.645-2	5.495-2	5.396-2	5.343-2	5.336-2	5.385-2	5.515-2	5.757-2	6.145-2	6.714-2	7.430-2
2	38	1.259-2	1.083-2	9.517-3	8.551-3	7.822-3	7.234-3	6.723-3	6.259-3	5.840-3	5.485-3	5.187-3
2	39	2.822-2	2.771-2	2.736-2	2.713-2	2.702-2	2.706-2	2.736-2	2.806-2	2.933-2	3.136-2	3.404-2
2	40	1.018-1	1.021-1	1.027-1	1.039-1	1.058-1	1.090-1	1.144-1	1.227-1	1.347-1	1.513-1	1.714-1
2	41	1.196-2	1.126-2	1.071-2	1.023-2	9.749-3	9.203-3	8.560-3	7.812-3	6.984-3	6.132-3	5.307-3
2	42	1.808-2	1.806-2	1.804-2	1.805-2	1.811-2	1.827-2	1.861-2	1.926-2	2.034-2	2.198-2	2.410-2
2	43	3.998-2	4.025-2	4.060-2	4.109-2	4.187-2	4.312-2	4.514-2	4.826-2	5.279-2	5.906-2	6.668-2
2	44	1.900-2	1.915-2	1.933-2	1.960-2	2.000-2	2.065-2	2.166-2	2.321-2	2.545-2	2.853-2	3.226-2
2	45	4.641-3	4.599-3	4.534-3	4.437-3	4.296-3	4.102-3	3.853-3	3.554-3	3.227-3	2.904-3	2.614-3
2	46	7.779-3	7.693-3	7.557-3	7.353-3	7.055-3	6.640-3	6.094-3	5.418-3	4.645-3	3.830-3	3.036-3

Table 3. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
3	4	3.926-1	3.731-1	3.488-1	3.146-1	2.769-1	2.455-1	2.217-1	1.986-1	1.712-1	1.404-1	1.102-1
3	5	2.339-2	2.383-2	2.345-2	2.245-2	2.188-2	2.262-2	2.388-2	2.395-2	2.201-2	1.855-2	1.462-2
3	6	9.901-2	9.524-2	8.593-2	7.355-2	6.103-2	5.019-2	4.150-2	3.467-2	2.923-2	2.477-2	2.104-2
3	7	8.138-2	7.076-2	6.065-2	5.193-2	4.511-2	4.024-2	3.704-2	3.521-2	3.451-2	3.476-2	3.564-2
3	8	3.126-2	2.599-2	2.071-2	1.583-2	1.173-2	8.558-3	6.259-3	4.666-3	3.602-3	2.922-3	2.507-3
3	9	7.102-1	6.922-1	6.793-1	6.727-1	6.741-1	6.844-1	7.036-1	7.333-1	7.765-1	8.347-1	9.021-1
3	10	3.638-3	3.622-3	3.358-3	2.964-3	2.559-3	2.202-3	1.898-3	1.632-3	1.386-3	1.152-3	9.302-4
3	11	1.401-1	1.401-1	1.400-1	1.403-1	1.415-1	1.440-1	1.481-1	1.542-1	1.631-1	1.750-1	1.886-1
3	12	6.457-1	6.476-1	6.503-1	6.553-1	6.646-1	6.799-1	7.026-1	7.352-1	7.808-1	8.409-1	9.091-1
3	13	6.406-1	6.432-1	6.471-1	6.533-1	6.631-1	6.777-1	6.993-1	7.303-1	7.735-1	8.303-1	8.941-1
3	14	5.165-2	5.149-2	5.138-2	5.139-2	5.156-2	5.194-2	5.255-2	5.350-2	5.493-2	5.696-2	5.930-2
3	15	6.967-3	6.955-3	6.899-3	6.808-3	6.678-3	6.478-3	6.172-3	5.730-3	5.146-3	4.450-3	3.694-3
3	16	4.436-3	4.693-3	5.353-3	6.333-3	7.218-3	7.774-3	7.941-3	7.628-3	6.890-3	5.952-3	5.022-3
3	17	2.206-3	2.271-3	2.477-3	2.803-3	3.090-3	3.231-3	3.207-3	3.028-3	2.744-3	2.433-3	2.148-3
3	18	9.729-4	9.875-4	1.036-3	1.103-3	1.151-3	1.161-3	1.134-3	1.074-3	9.935-4	9.121-4	8.387-4
3	19	1.347-3	1.627-3	2.141-3	2.782-3	3.272-3	3.489-3	3.438-3	3.134-3	2.652-3	2.117-3	1.624-3
3	20	3.304-4	6.040-4	1.066-3	1.554-3	1.846-3	1.910-3	1.797-3	1.551-3	1.236-3	9.224-4	6.553-4
3	21	1.816-2	1.496-2	1.174-2	8.810-3	6.399-3	4.565-3	3.236-3	2.298-3	1.637-3	1.168-3	8.300-4
3	22	1.133-1	9.390-2	7.337-2	5.451-2	3.912-2	2.759-2	1.949-2	1.411-2	1.075-2	8.886-3	8.077-3
3	23	3.329-1	2.806-1	2.184-1	1.606-1	1.138-1	7.917-2	5.503-2	3.905-2	2.907-2	2.345-2	2.086-2
3	24	1.142-1	8.472-2	6.140-2	4.350-2	3.032-2	2.097-2	1.451-2	1.009-2	7.064-3	4.966-3	3.488-3
3	25	3.132-2	2.583-2	2.057-2	1.603-2	1.244-2	9.760-3	7.803-3	6.373-3	5.310-3	4.509-3	3.893-3
3	26	5.979-2	5.035-2	4.078-2	3.249-2	2.602-2	2.128-2	1.795-2	1.563-2	1.405-2	1.299-2	1.226-2
3	27	2.604-2	2.193-2	1.771-2	1.394-2	1.091-2	8.586-3	6.830-3	5.472-3	4.376-3	3.461-3	2.685-3
3	28	8.453-2	7.037-2	5.605-2	4.347-2	3.352-2	2.616-2	2.090-2	1.721-2	1.464-2	1.288-2	1.169-2
3	29	2.676-2	2.316-2	1.899-2	1.506-2	1.180-2	9.275-3	7.357-3	5.876-3	4.692-3	3.715-3	2.895-3
3	30	5.208-3	4.442-3	3.719-3	3.110-3	2.634-3	2.279-3	2.016-3	1.821-3	1.677-3	1.576-3	1.505-3
3	31	3.538-2	2.942-2	2.354-2	1.844-2	1.440-2	1.138-2	9.160-3	7.523-3	6.286-3	5.333-3	4.584-3
3	32	2.224-1	2.016-1	1.813-1	1.642-1	1.514-1	1.429-1	1.377-1	1.352-1	1.346-1	1.354-1	1.361-1
3	33	3.441-2	2.961-2	2.481-2	2.065-2	1.734-2	1.477-2	1.274-2	1.106-2	9.601-3	8.296-3	7.121-3
3	34	2.441-2	2.161-2	1.946-2	1.783-2	1.658-2	1.558-2	1.473-2	1.400-2	1.343-2	1.307-2	1.293-2
3	35	3.378-3	2.830-3	2.382-3	2.034-3	1.764-3	1.547-3	1.355-3	1.174-3	9.954-4	8.203-4	6.554-4
3	36	4.771-2	4.395-2	4.105-2	3.898-2	3.764-2	3.692-2	3.684-2	3.751-2	3.906-2	4.172-2	4.526-2
3	37	2.315-2	2.097-2	1.931-2	1.804-2	1.704-2	1.618-2	1.542-2	1.474-2	1.419-2	1.386-2	1.376-2
3	38	3.043-2	2.624-2	2.303-2	2.062-2	1.873-2	1.712-2	1.565-2	1.423-2	1.287-2	1.161-2	1.049-2
3	39	7.773-3	7.080-3	6.560-3	6.161-3	5.831-3	5.529-3	5.229-3	4.924-3	4.630-3	4.370-3	4.150-3
3	40	2.282-2	2.120-2	1.994-2	1.887-2	1.785-2	1.676-2	1.552-2	1.410-2	1.254-2	1.096-2	9.445-3
3	41	2.393-1	2.407-1	2.422-1	2.444-1	2.479-1	2.541-1	2.649-1	2.822-1	3.080-1	3.440-1	3.881-1
3	42	1.108-1	1.116-1	1.124-1	1.135-1	1.153-1	1.182-1	1.231-1	1.308-1	1.423-1	1.583-1	1.778-1
3	43	3.114-2	3.125-2	3.138-2	3.156-2	3.187-2	3.240-2	3.333-2	3.491-2	3.734-2	4.087-2	4.529-2
3	44	2.038-3	1.994-3	1.943-3	1.876-3	1.789-3	1.672-3	1.523-3	1.343-3	1.140-3	9.293-4	7.267-4
3	45	7.713-3	7.627-3	7.491-3	7.285-3	6.986-3	6.570-3	6.024-3	5.351-3	4.583-3	3.773-3	2.985-3
3	46	1.778-2	1.761-2	1.735-2	1.695-2	1.639-2	1.562-2	1.462-2	1.343-2	1.211-2	1.081-2	9.626-3

Table 3. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
4	5	2.023-1	1.787-1	1.588-1	1.406-1	1.223-1	1.052-1	9.111-2	8.012-2	7.134-2	6.438-2	5.912-2
4	6	2.075-2	2.065-2	1.892-2	1.579-2	1.221-2	8.975-3	6.412-3	4.530-3	3.202-3	2.278-3	1.636-3
4	7	5.549-2	5.417-2	5.022-2	4.473-2	3.903-2	3.394-2	2.964-2	2.599-2	2.277-2	1.982-2	1.710-2
4	8	3.531-2	3.425-2	3.181-2	2.858-2	2.530-2	2.239-2	1.994-2	1.783-2	1.595-2	1.423-2	1.264-2
4	9	1.117-1	1.094-1	1.031-1	9.480-2	8.658-2	7.975-2	7.462-2	7.106-2	6.890-2	6.801-2	6.802-2
4	10	6.012-3	5.581-3	4.846-3	4.005-3	3.228-3	2.590-3	2.091-3	1.699-3	1.378-3	1.105-3	8.674-4
4	11	2.999-2	2.770-2	2.461-2	2.142-2	1.866-2	1.651-2	1.496-2	1.388-2	1.318-2	1.278-2	1.258-2
4	12	4.648-2	4.324-2	3.846-2	3.330-2	2.868-2	2.494-2	2.200-2	1.966-2	1.772-2	1.607-2	1.464-2
4	13	1.296-2	1.031-2	7.840-3	5.845-3	4.372-3	3.331-3	2.597-3	2.063-3	1.662-3	1.356-3	1.124-3
4	14	1.348-0	1.341-0	1.337-0	1.342-0	1.355-0	1.382-0	1.424-0	1.487-0	1.577-0	1.696-0	1.829-0
4	15	6.840-1	6.877-1	6.929-1	7.005-1	7.115-1	7.277-1	7.513-1	7.851-1	8.323-1	8.941-1	9.635-1
4	16	1.315-3	1.381-3	1.687-3	2.246-3	2.810-3	3.161-3	3.232-3	3.014-3	2.585-3	2.076-3	1.596-3
4	17	7.079-4	7.188-4	8.323-4	1.054-3	1.275-3	1.408-3	1.424-3	1.321-3	1.131-3	9.079-4	6.972-4
4	18	1.995-4	2.000-4	2.282-4	2.848-4	3.403-4	3.707-4	3.692-4	3.371-4	2.842-4	2.244-4	1.685-4
4	19	8.498-3	9.010-3	9.935-3	1.102-2	1.177-2	1.203-2	1.186-2	1.124-2	1.028-2	9.211-3	8.203-3
4	20	1.636-3	1.928-3	2.329-3	2.659-3	2.793-3	2.802-3	2.745-3	2.578-3	2.289-3	1.938-3	1.597-3
4	21	2.090-2	1.776-2	1.416-2	1.068-2	7.721-3	5.437-3	3.777-3	2.612-3	1.806-3	1.250-3	8.631-4
4	22	1.279-1	1.090-1	8.514-2	6.252-2	4.404-2	3.026-2	2.055-2	1.396-2	9.590-3	6.753-3	4.951-3
4	23	2.042-1	1.625-1	1.229-1	8.927-2	6.306-2	4.387-2	3.039-2	2.114-2	1.485-2	1.056-2	7.645-3
4	24	4.404-0	2.926-0	1.919-0	1.247-0	8.041-1	5.164-1	3.313-1	2.134-1	1.390-1	9.275-2	6.469-2
4	25	1.900-1	1.622-1	1.252-1	9.056-2	6.305-2	4.305-2	2.923-2	1.998-2	1.389-2	9.933-3	7.378-3
4	26	6.149-2	5.269-2	4.253-2	3.314-2	2.553-2	1.977-2	1.553-2	1.241-2	1.005-2	8.207-3	6.728-3
4	27	4.531-1	3.433-1	2.446-1	1.679-1	1.127-1	7.496-2	4.985-2	3.346-2	2.288-2	1.613-2	1.186-2
4	28	6.432-2	5.416-2	4.439-2	3.582-2	2.885-2	2.343-2	1.920-2	1.578-2	1.291-2	1.041-2	8.235-3
4	29	6.178-1	3.979-1	2.562-1	1.652-1	1.069-1	6.970-2	4.590-2	3.068-2	2.091-2	1.461-2	1.053-2
4	30	9.442-3	6.921-3	5.076-3	3.750-3	2.815-3	2.158-3	1.689-3	1.340-3	1.067-3	8.443-4	6.588-4
4	31	2.269-2	1.905-2	1.550-2	1.244-2	1.000-2	8.130-3	6.682-3	5.514-3	4.526-3	3.663-3	2.905-3
4	32	4.652-2	3.937-2	3.232-2	2.610-2	2.109-2	1.724-2	1.433-2	1.209-2	1.030-2	8.829-3	7.595-3
4	33	2.675-1	2.530-1	2.298-1	2.048-1	1.833-1	1.674-1	1.568-1	1.506-1	1.479-1	1.475-1	1.479-1
4	34	3.021-2	2.755-2	2.533-2	2.358-2	2.228-2	2.135-2	2.077-2	2.054-2	2.073-2	2.143-2	2.256-2
4	35	5.509-3	4.841-3	4.182-3	3.624-3	3.208-3	2.934-3	2.787-3	2.754-3	2.828-3	3.000-3	3.230-3
4	36	3.544-2	3.152-2	2.809-2	2.529-2	2.300-2	2.106-2	1.929-2	1.759-2	1.597-2	1.450-2	1.326-2
4	37	4.738-2	4.547-2	4.400-2	4.304-2	4.261-2	4.281-2	4.381-2	4.585-2	4.917-2	5.402-2	6.005-2
4	38	5.055-2	4.521-2	4.046-2	3.646-2	3.302-2	2.984-2	2.667-2	2.333-2	1.983-2	1.629-2	1.290-2
4	39	9.407-3	8.122-3	7.087-3	6.269-3	5.604-3	5.023-3	4.468-3	3.908-3	3.338-3	2.779-3	2.257-3
4	40	3.155-2	3.002-2	2.870-2	2.766-2	2.688-2	2.637-2	2.614-2	2.628-2	2.691-2	2.819-2	3.000-2
4	41	3.093-2	2.809-2	2.559-2	2.348-2	2.164-2	1.990-2	1.814-2	1.627-2	1.433-2	1.242-2	1.066-2
4	42	3.002-2	2.867-2	2.755-2	2.664-2	2.588-2	2.523-2	2.471-2	2.439-2	2.440-2	2.489-2	2.586-2
4	43	1.131-2	1.065-2	1.008-2	9.574-3	9.083-3	8.559-3	7.973-3	7.322-3	6.635-3	5.971-3	5.379-3
4	44	3.134-3	2.940-3	2.773-3	2.620-3	2.463-3	2.286-3	2.077-3	1.834-3	1.562-3	1.279-3	1.005-3
4	45	7.903-3	7.913-3	7.936-3	7.978-3	8.052-3	8.178-3	8.394-3	8.746-3	9.282-3	1.004-2	1.094-2
4	46	3.168-1	3.173-1	3.184-1	3.206-1	3.253-1	3.342-1	3.499-1	3.753-1	4.128-1	4.648-1	5.283-1

Table 3. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
5	6	1.358-3	1.439-3	1.363-3	1.157-3	8.988-4	6.565-4	4.610-4	3.161-4	2.138-4	1.435-4	9.573-5
5	7	3.990-3	3.609-3	3.046-3	2.414-3	1.824-3	1.340-3	9.723-4	7.036-4	5.086-4	3.662-4	2.617-4
5	8	5.537-3	5.197-3	4.764-3	4.332-3	3.979-3	3.744-3	3.627-3	3.621-3	3.731-3	3.954-3	4.259-3
5	9	4.794-3	4.302-3	3.604-3	2.820-3	2.084-3	1.480-3	1.025-3	6.991-4	4.709-4	3.133-4	2.061-4
5	10	3.944-3	3.786-3	3.559-3	3.302-3	3.048-3	2.808-3	2.574-3	2.329-3	2.062-3	1.771-3	1.467-3
5	11	1.603-2	1.546-2	1.467-2	1.381-2	1.301-2	1.234-2	1.177-2	1.127-2	1.083-2	1.046-2	1.013-2
5	12	1.717-2	1.631-2	1.509-2	1.370-2	1.235-2	1.113-2	1.002-2	8.936-3	7.825-3	6.666-3	5.485-3
5	13	7.705-3	6.944-3	6.283-3	5.788-3	5.466-3	5.299-3	5.264-3	5.352-3	5.561-3	5.887-3	6.282-3
5	14	3.910-2	2.863-2	2.007-2	1.370-2	9.228-3	6.190-3	4.167-3	2.828-3	1.938-3	1.339-3	9.306-4
5	15	2.599-1	2.612-1	2.629-1	2.656-1	2.697-1	2.758-1	2.849-1	2.980-1	3.162-1	3.399-1	3.665-1
5	16	1.653-4	1.661-4	1.928-4	2.616-4	3.420-4	3.973-4	4.121-4	3.833-4	3.226-4	2.504-4	1.830-4
5	17	1.704-4	1.704-4	1.951-4	2.490-4	3.039-4	3.347-4	3.343-4	3.038-4	2.530-4	1.960-4	1.438-4
5	18	7.644-5	7.618-5	8.569-5	1.050-4	1.235-4	1.330-4	1.317-4	1.199-4	1.011-4	8.017-5	6.081-5
5	19	7.041-4	7.135-4	7.653-4	8.483-4	9.150-4	9.451-4	9.419-4	9.049-4	8.413-4	7.693-4	7.026-4
5	20	2.571-3	3.010-3	3.391-3	3.621-3	3.681-3	3.712-3	3.749-3	3.636-3	3.300-3	2.824-3	2.331-3
5	21	3.370-3	2.789-3	2.181-3	1.624-3	1.166-3	8.189-4	5.696-4	3.956-4	2.755-4	1.922-4	1.340-4
5	22	4.749-2	4.256-2	3.535-2	2.725-2	1.978-2	1.376-2	9.317-3	6.221-3	4.140-3	2.776-3	1.900-3
5	23	4.372-2	3.489-2	2.656-2	1.939-2	1.374-2	9.561-3	6.608-3	4.569-3	3.170-3	2.206-3	1.534-3
5	24	2.055-0	1.741-0	1.393-0	1.042-0	7.382-1	5.029-1	3.339-1	2.183-1	1.416-1	9.196-2	6.035-2
5	25	5.527-0	4.728-0	3.616-0	2.576-0	1.755-0	1.162-0	7.561-1	4.865-1	3.108-1	1.977-1	1.254-1
5	26	4.207-2	3.254-2	2.368-2	1.661-2	1.144-2	7.838-3	5.388-3	3.733-3	2.608-3	1.831-3	1.285-3
5	27	1.497+1	1.123+1	7.909-0	5.347-0	3.524-0	2.286-0	1.468-0	9.366-1	5.952-1	3.773-1	2.388-1
5	28	1.359-2	1.167-2	9.579-3	7.670-3	6.109-3	4.898-3	3.962-3	3.216-3	2.596-3	2.062-3	1.600-3
5	29	2.133+1	1.354+1	8.580-0	5.428-0	3.431-0	2.168-0	1.369-0	8.646-1	5.461-1	3.449-1	2.178-1
5	30	1.693-1	1.076-1	6.831-2	4.331-2	2.746-2	1.741-2	1.106-2	7.037-3	4.491-3	2.878-3	1.855-3
5	31	6.726-3	5.795-3	4.730-3	3.742-3	2.932-3	2.308-3	1.835-3	1.468-3	1.171-3	9.223-4	7.115-4
5	32	1.218-2	9.593-3	7.302-3	5.463-3	4.086-3	3.094-3	2.387-3	1.877-3	1.498-3	1.211-3	9.880-4
5	33	1.071-2	8.832-3	7.116-3	5.713-3	4.671-3	3.961-3	3.524-3	3.305-3	3.263-3	3.367-3	3.560-3
5	34	2.626-3	2.239-3	1.905-3	1.634-3	1.416-3	1.234-3	1.072-3	9.158-4	7.630-4	6.154-4	4.787-4
5	35	4.092-2	3.742-2	3.420-2	3.161-2	2.976-2	2.857-2	2.793-2	2.773-2	2.789-2	2.830-2	2.870-2
5	36	4.091-3	3.604-3	3.182-3	2.834-3	2.542-3	2.280-3	2.023-3	1.758-3	1.484-3	1.208-3	9.461-4
5	37	3.363-3	2.873-3	2.427-3	2.059-3	1.763-3	1.518-3	1.302-3	1.100-3	9.070-4	7.244-4	5.587-4
5	38	7.455-3	6.757-3	6.167-3	5.671-3	5.226-3	4.787-3	4.314-3	3.790-3	3.221-3	2.636-3	2.072-3
5	39	2.086-3	1.827-3	1.630-3	1.484-3	1.375-3	1.292-3	1.227-3	1.180-3	1.154-3	1.154-3	1.181-3
5	40	3.721-3	3.321-3	2.983-3	2.702-3	2.457-3	2.224-3	1.984-3	1.727-3	1.456-3	1.182-3	9.226-4
5	41	3.639-3	3.240-3	2.924-3	2.666-3	2.437-3	2.210-3	1.968-3	1.706-3	1.428-3	1.149-3	8.897-4
5	42	5.581-3	5.209-3	4.899-3	4.623-3	4.346-3	4.040-3	3.681-3	3.262-3	2.793-3	2.300-3	1.819-3
5	43	4.556-3	4.241-3	3.990-3	3.773-3	3.560-3	3.327-3	3.056-3	2.742-3	2.391-3	2.026-3	1.672-3
5	44	1.790-3	1.656-3	1.552-3	1.464-3	1.378-3	1.284-3	1.174-3	1.044-3	8.988-4	7.446-4	5.924-4
5	45	7.637-2	7.668-2	7.719-2	7.805-2	7.955-2	8.213-2	8.641-2	9.307-2	1.027-1	1.159-1	1.319-1
5	46	2.355-3	2.364-3	2.378-3	2.400-3	2.437-3	2.496-3	2.590-3	2.732-3	2.933-3	3.194-3	3.477-3

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
6	7	8.464-02	7.826-02	7.271-02	6.770-02	6.288-02	5.796-02	5.270-02	4.697-02	4.073-02	3.418-02	2.765-02
6	8	4.812-02	4.499-02	4.225-02	3.971-02	3.717-02	3.447-02	3.149-02	2.815-02	2.446-02	2.054-02	1.661-02
6	9	1.069-01	1.010-01	9.587-02	9.088-02	8.555-02	7.961-02	7.291-02	6.532-02	5.688-02	4.789-02	3.885-02
6	10	7.923-03	7.896-03	7.779-03	7.552-03	7.208-03	6.746-03	6.165-03	5.470-03	4.684-03	3.853-03	3.037-03
6	11	2.444-02	2.438-02	2.397-02	2.321-02	2.210-02	2.065-02	1.885-02	1.672-02	1.432-02	1.179-02	9.304-03
6	12	4.013-02	4.018-02	3.963-02	3.845-02	3.666-02	3.427-02	3.131-02	2.779-02	2.382-02	1.963-02	1.552-02
6	13	1.534-02	1.440-02	1.286-02	1.088-02	8.805-03	6.924-03	5.376-03	4.160-03	3.214-03	2.471-03	1.878-03
6	14	1.588-03	1.495-03	1.331-03	1.107-03	8.637-04	6.418-04	4.620-04	3.265-04	2.284-04	1.586-04	1.093-04
6	15	9.959-04	9.686-04	8.714-04	7.245-04	5.653-04	4.227-04	3.090-04	2.238-04	1.618-04	1.170-04	8.434-05
6	16	1.989-02	1.971-02	1.951-02	1.927-02	1.893-02	1.845-02	1.776-02	1.681-02	1.557-02	1.409-02	1.246-02
6	17	1.002-02	9.960-03	9.881-03	9.763-03	9.584-03	9.312-03	8.914-03	8.356-03	7.628-03	6.750-03	5.777-03
6	18	3.141-03	3.128-03	3.106-03	3.068-03	3.008-03	2.916-03	2.780-03	2.590-03	2.339-03	2.037-03	1.702-03
6	19	2.514-04	2.509-04	2.498-04	2.476-04	2.437-04	2.373-04	2.279-04	2.146-04	1.972-04	1.764-04	1.534-04
6	20	7.416-06	7.724-06	7.932-06	7.931-06	7.733-06	7.400-06	6.959-06	6.401-06	5.723-06	4.946-06	4.114-06
6	21	7.197-06	5.880-06	4.711-06	3.714-06	2.908-06	2.278-06	1.788-06	1.400-06	1.084-06	8.263-07	6.189-07
6	22	5.036-05	3.974-05	3.023-05	2.232-05	1.617-05	1.162-05	8.341-06	5.994-06	4.301-06	3.068-06	2.169-06
6	23	5.757-05	4.907-05	3.933-05	3.019-05	2.263-05	1.682-05	1.253-05	9.379-06	7.055-06	5.327-06	4.039-06
6	24	2.054-05	1.634-05	1.237-05	8.974-06	6.303-06	4.338-06	2.954-06	2.001-06	1.352-06	9.109-07	6.111-07
6	25	9.181-06	7.657-06	6.004-06	4.449-06	3.158-06	2.181-06	1.484-06	1.005-06	6.809-07	4.638-07	3.185-07
6	26	1.485-05	1.210-05	9.361-06	6.983-06	5.109-06	3.724-06	2.733-06	2.032-06	1.533-06	1.177-06	9.215-07
6	27	8.112-06	6.875-06	5.578-06	4.405-06	3.448-06	2.714-06	2.165-06	1.752-06	1.441-06	1.208-06	1.036-06
6	28	1.267-05	1.076-05	8.525-06	6.418-06	4.690-06	3.396-06	2.481-06	1.862-06	1.462-06	1.226-06	1.111-06
6	29	1.290-05	1.118-05	9.062-06	7.035-06	5.361-06	4.091-06	3.168-06	2.514-06	2.057-06	1.751-06	1.558-06
6	30	7.780-06	7.180-06	6.463-06	5.756-06	5.107-06	4.508-06	3.935-06	3.368-06	2.804-06	2.257-06	1.751-06
6	31	2.585-05	2.260-05	1.933-05	1.642-05	1.396-05	1.190-05	1.011-05	8.487-06	6.982-06	5.590-06	4.342-06
6	32	4.958-05	4.295-05	3.633-05	3.046-05	2.560-05	2.161-05	1.823-05	1.524-05	1.250-05	9.991-06	7.736-06
6	33	8.091-06	6.700-06	5.380-06	4.281-06	3.425-06	2.767-06	2.250-06	1.824-06	1.461-06	1.146-06	8.743-07
6	34	3.280-06	2.607-06	2.074-06	1.675-06	1.379-06	1.154-06	9.716-07	8.122-07	6.674-07	5.352-07	4.177-07
6	35	5.305-07	4.015-07	3.042-07	2.332-07	1.818-07	1.439-07	1.146-07	9.107-08	7.137-08	5.474-08	4.088-08
6	36	7.001-06	6.019-06	5.262-06	4.683-06	4.220-06	3.814-06	3.423-06	3.020-06	2.600-06	2.174-06	1.760-06
6	37	1.034-05	9.661-06	9.090-06	8.571-06	8.048-06	7.471-06	6.808-06	6.055-06	5.236-06	4.398-06	3.589-06
6	38	2.257-06	1.785-06	1.440-06	1.194-06	1.016-06	8.817-07	7.730-07	6.803-07	6.006-07	5.359-07	4.868-07
6	39	1.797-05	1.756-05	1.712-05	1.661-05	1.596-05	1.510-05	1.399-05	1.261-05	1.102-05	9.283-06	7.533-06
6	40	1.931-05	1.884-05	1.835-05	1.778-05	1.707-05	1.613-05	1.493-05	1.346-05	1.177-05	9.961-06	8.153-06
6	41	3.921-05	3.878-05	3.815-05	3.724-05	3.594-05	3.415-05	3.178-05	2.883-05	2.538-05	2.162-05	1.777-05
6	42	2.260-05	2.234-05	2.194-05	2.135-05	2.050-05	1.933-05	1.782-05	1.598-05	1.391-05	1.174-05	9.613-06
6	43	1.202-05	1.185-05	1.161-05	1.126-05	1.075-05	1.006-05	9.179-06	8.115-06	6.934-06	5.720-06	4.562-06
6	44	3.617-06	3.565-06	3.485-06	3.366-06	3.196-06	2.967-06	2.675-06	2.333-06	1.961-06	1.590-06	1.247-06
6	45	6.871-07	6.780-07	6.640-07	6.433-07	6.142-07	5.752-07	5.260-07	4.673-07	4.020-07	3.339-07	2.675-07
6	46	8.053-07	7.952-07	7.796-07	7.568-07	7.247-07	6.815-07	6.265-07	5.607-07	4.866-07	4.085-07	3.312-07
7	8	2.659-01	2.407-01	2.112-01	1.818-01	1.541-01	1.294-01	1.080-01	8.956-02	7.351-02	5.930-02	4.671-02

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
7	9	4.775-01	4.018-01	3.414-01	2.892-01	2.415-01	1.984-01	1.614-01	1.306-01	1.051-01	8.380-02	6.596-02
7	10	4.088-02	4.331-02	4.415-02	4.343-02	4.165-02	3.951-02	3.754-02	3.608-02	3.525-02	3.506-02	3.525-02
7	11	7.070-02	7.620-02	7.184-02	6.200-02	5.059-02	4.007-02	3.151-02	2.506-02	2.042-02	1.719-02	1.496-02
7	12	1.508-01	1.714-01	1.761-01	1.663-01	1.470-01	1.246-01	1.040-01	8.763-02	7.569-02	6.763-02	6.236-02
7	13	1.764-01	1.842-01	1.746-01	1.504-01	1.196-01	8.980-02	6.511-02	4.635-02	3.273-02	2.302-02	1.613-02
7	14	8.219-02	7.894-02	7.408-02	6.743-02	5.981-02	5.219-02	4.506-02	3.847-02	3.231-02	2.652-02	2.117-02
7	15	2.270-02	2.250-02	2.111-02	1.888-02	1.635-02	1.390-02	1.170-02	9.730-03	7.949-03	6.331-03	4.889-03
7	16	3.137-01	3.130-01	3.136-01	3.156-01	3.197-01	3.262-01	3.360-01	3.505-01	3.708-01	3.974-01	4.271-01
7	17	3.932-01	3.948-01	3.974-01	4.014-01	4.077-01	4.169-01	4.302-01	4.495-01	4.764-01	5.116-01	5.508-01
7	18	2.381-03	2.340-03	2.297-03	2.248-03	2.186-03	2.104-03	1.990-03	1.838-03	1.646-03	1.419-03	1.174-03
7	19	1.901-02	1.898-02	1.890-02	1.877-02	1.855-02	1.822-02	1.774-02	1.709-02	1.627-02	1.533-02	1.431-02
7	20	1.854-04	1.849-04	1.838-04	1.813-04	1.765-04	1.691-04	1.585-04	1.445-04	1.273-04	1.080-04	8.800-05
7	21	1.329-04	1.144-04	9.346-05	7.381-05	5.776-05	4.596-05	3.809-05	3.350-05	3.159-05	3.187-05	3.357-05
7	22	1.293-03	9.192-04	6.338-04	4.278-04	2.848-04	1.885-04	1.251-04	8.393-05	5.765-05	4.119-05	3.108-05
7	23	6.958-04	5.646-04	4.294-04	3.130-04	2.234-04	1.591-04	1.155-04	8.710-05	6.972-05	6.005-05	5.538-05
7	24	4.604-04	3.332-04	2.353-04	1.623-04	1.099-04	7.359-05	4.903-05	3.271-05	2.196-05	1.494-05	1.038-05
7	25	7.607-05	6.230-05	4.920-05	3.794-05	2.909-05	2.261-05	1.810-05	1.513-05	1.333-05	1.244-05	1.221-05
7	26	1.527-04	1.269-04	1.028-04	8.265-05	6.720-05	5.638-05	4.971-05	4.672-05	4.712-05	5.082-05	5.722-05
7	27	1.805-04	1.584-04	1.355-04	1.154-04	9.993-05	8.935-05	8.336-05	8.147-05	8.328-05	8.856-05	9.628-05
7	28	6.837-05	5.666-05	4.531-05	3.543-05	2.759-05	2.173-05	1.750-05	1.448-05	1.235-05	1.088-05	9.857-06
7	29	1.778-04	1.560-04	1.321-04	1.103-04	9.309-05	8.092-05	7.328-05	6.948-05	6.886-05	7.095-05	7.486-05
7	30	1.394-05	1.197-05	9.925-06	8.099-06	6.595-06	5.392-06	4.421-06	3.612-06	2.914-06	2.303-06	1.772-06
7	31	3.253-04	3.080-04	2.903-04	2.751-04	2.638-04	2.567-04	2.537-04	2.546-04	2.592-04	2.671-04	2.764-04
7	32	1.561-04	1.424-04	1.277-04	1.147-04	1.045-04	9.754-05	9.381-05	9.340-05	9.640-05	1.031-04	1.127-04
7	33	9.394-05	7.998-05	6.649-05	5.492-05	4.566-05	3.842-05	3.272-05	2.811-05	2.430-05	2.118-05	1.866-05
7	34	3.598-05	3.144-05	2.782-05	2.497-05	2.264-05	2.060-05	1.873-05	1.696-05	1.536-05	1.403-05	1.298-05
7	35	5.568-06	4.798-06	4.124-06	3.549-06	3.049-06	2.595-06	2.167-06	1.762-06	1.389-06	1.060-06	7.844-07
7	36	4.075-05	3.626-05	3.269-05	2.984-05	2.745-05	2.528-05	2.319-05	2.113-05	1.916-05	1.737-05	1.580-05
7	37	1.454-04	1.438-04	1.425-04	1.411-04	1.396-04	1.381-04	1.370-04	1.365-04	1.368-04	1.380-04	1.389-04
7	38	2.200-05	1.914-05	1.691-05	1.515-05	1.368-05	1.236-05	1.109-05	9.863-06	8.707-06	7.693-06	6.851-06
7	39	4.120-05	3.970-05	3.840-05	3.715-05	3.582-05	3.430-05	3.254-05	3.050-05	2.822-05	2.576-05	2.316-05
7	40	3.116-04	3.139-04	3.152-04	3.156-04	3.155-04	3.156-04	3.168-04	3.196-04	3.242-04	3.301-04	3.345-04
7	41	4.061-05	3.922-05	3.788-05	3.646-05	3.483-05	3.291-05	3.070-05	2.828-05	2.586-05	2.363-05	2.171-05
7	42	1.236-04	1.238-04	1.237-04	1.233-04	1.229-04	1.226-04	1.227-04	1.233-04	1.248-04	1.270-04	1.291-04
7	43	5.124-05	5.108-05	5.081-05	5.042-05	4.993-05	4.937-05	4.875-05	4.804-05	4.715-05	4.593-05	4.400-05
7	44	2.185-05	2.168-05	2.151-05	2.133-05	2.112-05	2.087-05	2.055-05	2.011-05	1.950-05	1.867-05	1.753-05
7	45	1.077-05	1.056-05	1.026-05	9.823-06	9.225-06	8.449-06	7.507-06	6.443-06	5.337-06	4.272-06	3.319-06
7	46	4.993-05	4.925-05	4.822-05	4.670-05	4.454-05	4.163-05	3.794-05	3.355-05	2.869-05	2.368-05	1.885-05
8	9	8.546-02	7.141-02	5.926-02	4.866-02	3.948-02	3.179-02	2.555-02	2.057-02	1.656-02	1.329-02	1.059-02
8	10	1.297-02	1.610-02	1.726-02	1.643-02	1.422-02	1.148-02	8.843-03	6.632-03	4.894-03	3.568-03	2.567-03
8	11	8.337-02	9.379-02	9.809-02	9.625-02	8.931-02	7.977-02	7.021-02	6.218-02	5.622-02	5.227-02	4.975-02

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
8	12	4.535-02	5.054-02	5.091-02	4.744-02	4.182-02	3.576-02	3.040-02	2.619-02	2.316-02	2.115-02	1.984-02
8	13	1.259-01	1.441-01	1.502-01	1.400-01	1.175-01	9.094-02	6.658-02	4.711-02	3.272-02	2.250-02	1.540-02
8	14	3.970-02	3.830-02	3.640-02	3.382-02	3.078-02	2.759-02	2.441-02	2.125-02	1.810-02	1.499-02	1.201-02
8	15	1.314-02	1.334-02	1.272-02	1.146-02	9.935-03	8.425-03	7.053-03	5.834-03	4.740-03	3.758-03	2.890-03
8	16	4.877-02	4.640-02	4.485-02	4.399-02	4.370-02	4.393-02	4.467-02	4.603-02	4.811-02	5.094-02	5.414-02
8	17	2.053-01	2.060-01	2.071-01	2.090-01	2.121-01	2.168-01	2.236-01	2.335-01	2.473-01	2.653-01	2.855-01
8	18	1.832-01	1.840-01	1.853-01	1.872-01	1.902-01	1.946-01	2.009-01	2.099-01	2.226-01	2.391-01	2.576-01
8	19	8.020-03	7.986-03	7.925-03	7.823-03	7.664-03	7.420-03	7.066-03	6.578-03	5.950-03	5.206-03	4.394-03
8	20	1.999-04	2.004-04	2.010-04	2.013-04	2.012-04	2.006-04	2.001-04	2.001-04	2.013-04	2.044-04	2.087-04
8	21	4.737-05	3.908-05	3.045-05	2.263-05	1.627-05	1.148-05	8.055-06	5.665-06	4.014-06	2.873-06	2.076-06
8	22	4.781-04	3.997-04	3.133-04	2.341-04	1.703-04	1.232-04	9.072-05	6.959-05	5.689-05	5.030-05	4.772-05
8	23	1.972-04	1.544-04	1.156-04	8.345-05	5.881-05	4.108-05	2.891-05	2.088-05	1.578-05	1.275-05	1.107-05
8	24	5.836-04	4.014-04	2.722-04	1.825-04	1.214-04	8.071-05	5.402-05	3.674-05	2.572-05	1.881-05	1.457-05
8	25	1.761-04	1.496-04	1.200-04	9.310-05	7.177-05	5.641-05	4.635-05	4.070-05	3.869-05	3.983-05	4.337-05
8	26	6.417-05	5.332-05	4.264-05	3.344-05	2.625-05	2.099-05	1.732-05	1.489-05	1.341-05	1.270-05	1.249-05
8	27	1.896-04	1.456-04	1.054-04	7.371-05	5.059-05	3.454-05	2.370-05	1.646-05	1.162-05	8.367-06	6.142-06
8	28	2.322-05	1.952-05	1.569-05	1.226-05	9.500-06	7.404-06	5.858-06	4.726-06	3.894-06	3.281-06	2.825-06
8	29	2.856-04	1.994-04	1.410-04	1.017-04	7.560-05	5.884-05	4.862-05	4.314-05	4.123-05	4.220-05	4.523-05
8	30	2.337-04	2.199-04	2.046-04	1.908-04	1.803-04	1.736-04	1.708-04	1.715-04	1.756-04	1.830-04	1.920-04
8	31	1.008-04	9.421-05	8.738-05	8.146-05	7.705-05	7.433-05	7.333-05	7.407-05	7.657-05	8.089-05	8.640-05
8	32	4.487-05	3.831-05	3.187-05	2.631-05	2.187-05	1.844-05	1.584-05	1.388-05	1.248-05	1.157-05	1.108-05
8	33	4.179-05	3.601-05	3.024-05	2.513-05	2.088-05	1.743-05	1.457-05	1.214-05	1.002-05	8.205-06	6.686-06
8	34	3.824-05	3.223-05	2.756-05	2.403-05	2.131-05	1.911-05	1.719-05	1.546-05	1.391-05	1.258-05	1.148-05
8	35	6.867-06	5.934-06	5.046-06	4.292-06	3.693-06	3.231-06	2.878-06	2.615-06	2.430-06	2.318-06	2.259-06
8	36	2.219-05	1.907-05	1.666-05	1.476-05	1.320-05	1.180-05	1.050-05	9.273-06	8.185-06	7.299-06	6.627-06
8	37	3.192-05	2.945-05	2.751-05	2.584-05	2.425-05	2.260-05	2.083-05	1.892-05	1.690-05	1.483-05	1.277-05
8	38	9.209-06	8.298-06	7.530-06	6.871-06	6.266-06	5.663-06	5.031-06	4.365-06	3.688-06	3.042-06	2.463-06
8	39	3.069-04	3.099-04	3.120-04	3.131-04	3.136-04	3.143-04	3.161-04	3.196-04	3.247-04	3.311-04	3.358-04
8	40	3.373-05	3.308-05	3.239-05	3.160-05	3.067-05	2.954-05	2.820-05	2.672-05	2.518-05	2.370-05	2.228-05
8	41	1.462-05	1.407-05	1.348-05	1.281-05	1.199-05	1.100-05	9.828-06	8.544-06	7.235-06	6.012-06	4.952-06
8	42	9.365-06	8.977-06	8.618-06	8.267-06	7.895-06	7.480-06	7.006-06	6.476-06	5.910-06	5.333-06	4.751-06
8	43	3.105-05	3.089-05	3.074-05	3.060-05	3.046-05	3.033-05	3.025-05	3.022-05	3.029-05	3.045-05	3.054-05
8	44	4.998-06	4.927-06	4.866-06	4.809-06	4.752-06	4.691-06	4.624-06	4.550-06	4.464-06	4.356-06	4.194-06
8	45	1.590-05	1.580-05	1.565-05	1.544-05	1.518-05	1.488-05	1.456-05	1.426-05	1.402-05	1.384-05	1.365-05
8	46	3.088-05	3.050-05	2.991-05	2.904-05	2.780-05	2.612-05	2.397-05	2.138-05	1.850-05	1.550-05	1.257-05
9	10	2.613-03	2.367-03	2.027-03	1.645-03	1.265-03	9.267-04	6.529-04	4.474-04	3.008-04	1.997-04	1.313-04
9	11	1.109-01	1.159-01	1.111-01	1.005-01	8.813-02	7.656-02	6.720-02	6.039-02	5.598-02	5.356-02	5.241-02
9	12	1.951-01	2.061-01	2.044-01	1.925-01	1.745-01	1.555-01	1.386-01	1.254-01	1.161-01	1.103-01	1.068-01
9	13	1.888-01	1.889-01	1.748-01	1.488-01	1.181-01	8.931-02	6.570-02	4.776-02	3.461-02	2.507-02	1.812-02
9	14	1.508-01	1.396-01	1.275-01	1.138-01	9.908-02	8.491-02	7.206-02	6.062-02	5.032-02	4.096-02	3.251-02
9	15	2.892-02	2.889-02	2.770-02	2.537-02	2.245-02	1.942-02	1.655-02	1.389-02	1.141-02	9.120-03	7.054-03

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
9	16	9.812-01	9.853-01	9.920-01	1.002-00	1.018-00	1.042-00	1.075-00	1.123-00	1.191-00	1.279-00	1.377-00
9	17	5.404-03	5.183-03	4.973-03	4.777-03	4.582-03	4.363-03	4.096-03	3.761-03	3.353-03	2.882-03	2.380-03
9	18	3.516-04	2.894-04	2.369-04	1.957-04	1.638-04	1.380-04	1.160-04	9.622-05	7.817-05	6.202-05	4.807-05
9	19	5.304-02	5.312-02	5.316-02	5.316-02	5.313-02	5.304-02	5.290-02	5.276-02	5.272-02	5.288-02	5.310-02
9	20	6.434-05	6.435-05	6.415-05	6.301-05	6.038-05	5.621-05	5.058-05	4.366-05	3.595-05	2.821-05	2.116-05
9	21	4.907-05	3.890-05	2.951-05	2.142-05	1.502-05	1.028-05	6.936-06	4.643-06	3.096-06	2.060-06	1.367-06
9	22	2.703-03	1.898-03	1.294-03	8.663-04	5.735-04	3.785-04	2.512-04	1.696-04	1.182-04	8.693-05	6.846-05
9	23	1.532-03	1.265-03	9.682-04	7.052-04	4.996-04	3.511-04	2.496-04	1.832-04	1.421-04	1.187-04	1.069-04
9	24	8.714-04	6.156-04	4.261-04	2.896-04	1.942-04	1.294-04	8.612-05	5.772-05	3.930-05	2.751-05	2.004-05
9	25	7.199-05	5.538-05	4.119-05	2.990-05	2.149-05	1.549-05	1.134-05	8.498-06	6.545-06	5.193-06	4.240-06
9	26	1.723-04	1.451-04	1.200-04	9.924-05	8.367-05	7.296-05	6.648-05	6.362-05	6.393-05	6.719-05	7.258-05
9	27	7.067-05	5.756-05	4.454-05	3.329-05	2.447-05	1.792-05	1.320-05	9.796-06	7.303-06	5.434-06	4.007-06
9	28	2.840-04	2.468-04	2.065-04	1.697-04	1.404-04	1.195-04	1.067-04	1.013-04	1.028-04	1.110-04	1.245-04
9	29	6.133-05	4.946-05	3.827-05	2.875-05	2.133-05	1.586-05	1.193-05	9.122-06	7.076-06	5.550-06	4.386-06
9	30	1.662-05	1.375-05	1.112-05	8.925-06	7.201-06	5.883-06	4.879-06	4.108-06	3.527-06	3.110-06	2.822-06
9	31	7.209-05	5.998-05	4.817-05	3.792-05	2.976-05	2.355-05	1.887-05	1.532-05	1.260-05	1.051-05	8.897-06
9	32	8.263-04	7.627-04	6.947-04	6.344-04	5.880-04	5.568-04	5.403-04	5.374-04	5.472-04	5.689-04	5.975-04
9	33	1.900-04	1.740-04	1.571-04	1.419-04	1.295-04	1.199-04	1.128-04	1.080-04	1.055-04	1.051-04	1.065-04
9	34	2.648-05	2.232-05	1.895-05	1.632-05	1.426-05	1.256-05	1.106-05	9.656-06	8.341-06	7.141-06	6.082-06
9	35	1.014-05	8.503-06	7.151-06	6.047-06	5.124-06	4.309-06	3.560-06	2.865-06	2.238-06	1.698-06	1.259-06
9	36	9.242-05	8.530-05	7.978-05	7.569-05	7.269-05	7.051-05	6.897-05	6.801-05	6.765-05	6.790-05	6.829-05
9	37	5.024-05	4.365-05	3.841-05	3.422-05	3.069-05	2.744-05	2.424-05	2.095-05	1.760-05	1.432-05	1.128-05
9	38	6.279-05	5.342-05	4.633-05	4.101-05	3.687-05	3.348-05	3.055-05	2.800-05	2.587-05	2.429-05	2.321-05
9	39	1.871-05	1.655-05	1.485-05	1.344-05	1.218-05	1.093-05	9.639-06	8.313-06	7.013-06	5.827-06	4.815-06
9	40	3.492-05	3.180-05	2.926-05	2.704-05	2.491-05	2.269-05	2.027-05	1.765-05	1.493-05	1.229-05	9.886-06
9	41	6.972-04	6.992-04	7.005-04	7.015-04	7.027-04	7.055-04	7.107-04	7.194-04	7.317-04	7.471-04	7.593-04
9	42	1.297-04	1.289-04	1.277-04	1.262-04	1.243-04	1.219-04	1.191-04	1.158-04	1.120-04	1.076-04	1.020-04
9	43	4.285-05	4.211-05	4.130-05	4.034-05	3.916-05	3.766-05	3.580-05	3.358-05	3.106-05	2.835-05	2.553-05
9	44	7.041-06	6.767-06	6.492-06	6.189-06	5.826-06	5.376-06	4.825-06	4.183-06	3.485-06	2.784-06	2.132-06
9	45	1.775-05	1.737-05	1.681-05	1.601-05	1.492-05	1.353-05	1.187-05	1.002-05	8.129-06	6.340-06	4.769-06
9	46	9.258-05	9.149-05	8.984-05	8.743-05	8.410-05	7.971-05	7.429-05	6.803-05	6.132-05	5.460-05	4.820-05
10	11	3.854-02	3.787-02	3.694-02	3.568-02	3.403-02	3.198-02	2.950-02	2.659-02	2.328-02	1.970-02	1.606-02
10	12	1.653-02	1.792-02	1.820-02	1.743-02	1.591-02	1.409-02	1.226-02	1.056-02	9.035-03	7.676-03	6.476-03
10	13	2.946-02	3.273-02	3.255-02	2.904-02	2.362-02	1.795-02	1.306-02	9.259-03	6.471-03	4.483-03	3.082-03
10	14	8.825-03	8.420-03	7.832-03	7.033-03	6.124-03	5.223-03	4.391-03	3.639-03	2.957-03	2.341-03	1.796-03
10	15	9.262-03	9.399-03	9.108-03	8.475-03	7.666-03	6.816-03	5.986-03	5.182-03	4.396-03	3.630-03	2.900-03
10	16	2.923-03	2.253-03	1.763-03	1.418-03	1.177-03	1.003-03	8.698-04	7.564-04	6.506-04	5.469-04	4.457-04
10	17	9.581-02	9.636-02	9.714-02	9.829-02	9.997-02	1.024-01	1.058-01	1.107-01	1.176-01	1.265-01	1.365-01
10	18	1.418-03	1.401-03	1.380-03	1.355-03	1.321-03	1.275-03	1.211-03	1.123-03	1.011-03	8.766-04	7.298-04
10	19	3.055-03	3.033-03	3.001-03	2.956-03	2.890-03	2.794-03	2.656-03	2.467-03	2.223-03	1.931-03	1.611-03
10	20	8.806-04	8.761-04	8.689-04	8.574-04	8.393-04	8.118-04	7.715-04	7.156-04	6.432-04	5.568-04	4.624-04

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
10	21	5.646-05	5.107-05	4.526-05	4.003-05	3.596-05	3.319-05	3.162-05	3.104-05	3.122-05	3.193-05	3.274-05
10	22	4.509-05	3.831-05	3.031-05	2.275-05	1.649-05	1.175-05	8.326-06	5.909-06	4.214-06	3.021-06	2.174-06
10	23	1.881-04	1.467-04	1.082-04	7.691-05	5.360-05	3.723-05	2.622-05	1.910-05	1.470-05	1.219-05	1.093-05
10	24	1.041-04	7.411-05	5.156-05	3.516-05	2.360-05	1.568-05	1.036-05	6.838-06	4.514-06	2.982-06	1.971-06
10	25	2.261-05	1.976-05	1.696-05	1.452-05	1.263-05	1.135-05	1.072-05	1.074-05	1.145-05	1.290-05	1.499-05
10	26	1.785-05	1.445-05	1.119-05	8.407-06	6.222-06	4.600-06	3.426-06	2.575-06	1.947-06	1.473-06	1.108-06
10	27	3.820-05	3.304-05	2.816-05	2.407-05	2.104-05	1.918-05	1.863-05	1.954-05	2.211-05	2.659-05	3.283-05
10	28	1.271-05	1.094-05	8.969-06	7.129-06	5.622-06	4.487-06	3.679-06	3.131-06	2.783-06	2.587-06	2.490-06
10	29	2.469-05	2.175-05	1.845-05	1.540-05	1.294-05	1.120-05	1.022-05	1.003-05	1.067-05	1.223-05	1.462-05
10	30	2.220-06	1.928-06	1.595-06	1.283-06	1.025-06	8.206-07	6.602-07	5.305-07	4.217-07	3.284-07	2.489-07
10	31	7.136-05	6.511-05	5.887-05	5.342-05	4.920-05	4.626-05	4.447-05	4.365-05	4.361-05	4.415-05	4.483-05
10	32	1.093-05	9.158-06	7.411-06	5.898-06	4.686-06	3.746-06	3.011-06	2.419-06	1.925-06	1.507-06	1.154-06
10	33	1.214-05	1.027-05	8.413-06	6.780-06	5.445-06	4.384-06	3.531-06	2.828-06	2.236-06	1.732-06	1.310-06
10	34	1.387-05	1.273-05	1.187-05	1.127-05	1.091-05	1.076-05	1.082-05	1.109-05	1.162-05	1.242-05	1.338-05
10	35	3.957-06	3.576-06	3.204-06	2.875-06	2.589-06	2.331-06	2.082-06	1.829-06	1.565-06	1.294-06	1.031-06
10	36	6.936-06	6.028-06	5.286-06	4.684-06	4.170-06	3.698-06	3.232-06	2.761-06	2.290-06	1.842-06	1.437-06
10	37	3.044-05	2.950-05	2.885-05	2.852-05	2.848-05	2.869-05	2.911-05	2.971-05	3.045-05	3.122-05	3.173-05
10	38	6.760-06	5.928-06	5.251-06	4.699-06	4.221-06	3.771-06	3.320-06	2.861-06	2.415-06	2.015-06	1.687-06
10	39	9.586-06	9.308-06	9.064-06	8.814-06	8.528-06	8.195-06	7.815-06	7.395-06	6.946-06	6.478-06	5.971-06
10	40	3.291-05	3.228-05	3.189-05	3.176-05	3.186-05	3.212-05	3.244-05	3.273-05	3.285-05	3.265-05	3.185-05
10	41	5.408-06	5.174-06	4.963-06	4.749-06	4.508-06	4.219-06	3.869-06	3.458-06	2.998-06	2.516-06	2.043-06
10	42	4.328-06	4.181-06	4.068-06	3.982-06	3.907-06	3.830-06	3.748-06	3.673-06	3.634-06	3.665-06	3.766-06
10	43	9.614-06	9.651-06	9.673-06	9.681-06	9.687-06	9.711-06	9.770-06	9.866-06	9.987-06	1.008-05	1.003-05
10	44	5.074-05	5.095-05	5.120-05	5.153-05	5.201-05	5.269-05	5.366-05	5.493-05	5.652-05	5.837-05	6.001-05
10	45	6.279-06	6.213-06	6.109-06	5.954-06	5.728-06	5.416-06	5.006-06	4.500-06	3.914-06	3.286-06	2.658-06
10	46	9.348-06	9.179-06	8.926-06	8.561-06	8.057-06	7.399-06	6.594-06	5.676-06	4.706-06	3.756-06	2.887-06
11	12	1.153-01	1.189-01	1.135-01	1.032-01	9.122-02	7.945-02	6.857-02	5.857-02	4.921-02	4.039-02	3.218-02
11	13	1.232-01	1.300-01	1.284-01	1.158-01	9.527-02	7.273-02	5.271-02	3.696-02	2.541-02	1.726-02	1.163-02
11	14	3.716-02	3.398-02	3.059-02	2.683-02	2.291-02	1.919-02	1.587-02	1.297-02	1.043-02	8.203-03	6.271-03
11	15	2.700-02	2.760-02	2.716-02	2.572-02	2.359-02	2.118-02	1.870-02	1.625-02	1.382-02	1.144-02	9.179-03
11	16	1.571-01	1.571-01	1.579-01	1.594-01	1.620-01	1.658-01	1.713-01	1.793-01	1.904-01	2.049-01	2.211-01
11	17	2.122-02	2.106-02	2.097-02	2.093-02	2.097-02	2.108-02	2.128-02	2.160-02	2.212-02	2.285-02	2.369-02
11	18	1.265-01	1.270-01	1.280-01	1.294-01	1.316-01	1.348-01	1.392-01	1.456-01	1.546-01	1.663-01	1.793-01
11	19	1.437-02	1.432-02	1.426-02	1.418-02	1.408-02	1.395-02	1.377-02	1.354-02	1.328-02	1.303-02	1.275-02
11	20	4.973-03	4.969-03	4.960-03	4.943-03	4.915-03	4.869-03	4.801-03	4.710-03	4.599-03	4.479-03	4.349-03
11	21	6.736-05	5.351-05	4.051-05	2.945-05	2.082-05	1.451-05	1.008-05	7.040-06	4.977-06	3.576-06	2.614-06
11	22	1.224-03	8.926-04	6.356-04	4.487-04	3.188-04	2.318-04	1.753-04	1.397-04	1.181-04	1.058-04	9.873-05
11	23	6.860-04	5.442-04	4.041-04	2.875-04	1.997-04	1.376-04	9.570-05	6.833-05	5.116-05	4.103-05	3.549-05
11	24	2.079-03	1.385-03	9.123-04	5.961-04	3.880-04	2.527-04	1.657-04	1.100-04	7.468-05	5.236-05	3.827-05
11	25	1.180-04	1.003-04	7.961-05	6.092-05	4.628-05	3.586-05	2.908-05	2.529-05	2.395-05	2.473-05	2.716-05
11	26	9.939-05	8.651-05	7.430-05	6.412-05	5.659-05	5.192-05	5.033-05	5.209-05	5.756-05	6.723-05	8.065-05

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
11	27	2.252-04	1.728-04	1.252-04	8.768-05	6.037-05	4.146-05	2.876-05	2.043-05	1.509-05	1.179-05	9.891-06
11	28	4.317-05	3.646-05	2.952-05	2.329-05	1.824-05	1.444-05	1.168-05	9.753-06	8.444-06	7.608-06	7.092-06
11	29	3.402-04	2.371-04	1.680-04	1.218-04	9.148-05	7.242-05	6.174-05	5.783-05	5.984-05	6.754-05	7.992-05
11	30	3.370-05	2.988-05	2.589-05	2.227-05	1.930-05	1.698-05	1.518-05	1.375-05	1.258-05	1.157-05	1.066-05
11	31	1.510-04	1.361-04	1.214-04	1.086-04	9.876-05	9.208-05	8.824-05	8.685-05	8.756-05	9.002-05	9.331-05
11	32	8.591-05	7.653-05	6.646-05	5.747-05	5.036-05	4.513-05	4.143-05	3.883-05	3.698-05	3.562-05	3.438-05
11	33	4.584-05	3.902-05	3.212-05	2.604-05	2.108-05	1.716-05	1.402-05	1.144-05	9.269-06	7.419-06	5.859-06
11	34	2.761-05	2.361-05	2.047-05	1.815-05	1.648-05	1.526-05	1.439-05	1.381-05	1.354-05	1.360-05	1.394-05
11	35	1.375-05	1.236-05	1.100-05	9.786-06	8.753-06	7.852-06	7.015-06	6.193-06	5.357-06	4.515-06	3.692-06
11	36	5.042-05	4.627-05	4.318-05	4.109-05	3.985-05	3.934-05	3.951-05	4.038-05	4.202-05	4.442-05	4.714-05
11	37	3.895-05	3.654-05	3.463-05	3.304-05	3.162-05	3.022-05	2.876-05	2.720-05	2.553-05	2.373-05	2.173-05
11	38	2.139-05	1.841-05	1.606-05	1.425-05	1.277-05	1.143-05	1.011-05	8.752-06	7.401-06	6.153-06	5.086-06
11	39	7.326-05	7.199-05	7.118-05	7.079-05	7.077-05	7.106-05	7.160-05	7.226-05	7.285-05	7.306-05	7.222-05
11	40	7.011-05	6.884-05	6.799-05	6.752-05	6.741-05	6.758-05	6.798-05	6.849-05	6.897-05	6.914-05	6.839-05
11	41	4.125-05	3.999-05	3.903-05	3.829-05	3.764-05	3.698-05	3.618-05	3.515-05	3.382-05	3.213-05	2.997-05
11	42	3.091-05	3.076-05	3.061-05	3.044-05	3.028-05	3.017-05	3.016-05	3.031-05	3.064-05	3.112-05	3.143-05
11	43	1.572-04	1.580-04	1.586-04	1.592-04	1.600-04	1.612-04	1.633-04	1.663-04	1.705-04	1.756-04	1.803-04
11	44	7.654-06	7.627-06	7.593-06	7.548-06	7.498-06	7.454-06	7.429-06	7.429-06	7.450-06	7.464-06	7.384-06
11	45	2.360-05	2.342-05	2.313-05	2.271-05	2.211-05	2.129-05	2.024-05	1.895-05	1.747-05	1.587-05	1.420-05
11	46	3.065-05	3.017-05	2.944-05	2.838-05	2.692-05	2.498-05	2.260-05	1.986-05	1.695-05	1.406-05	1.139-05
12	13	1.381-01	1.428-01	1.344-01	1.152-01	9.122-02	6.830-02	4.936-02	3.499-02	2.455-02	1.711-02	1.185-02
12	14	5.911-02	5.531-02	5.065-02	4.496-02	3.880-02	3.287-02	2.750-02	2.274-02	1.848-02	1.467-02	1.132-02
12	15	4.506-02	4.567-02	4.463-02	4.212-02	3.868-02	3.487-02	3.098-02	2.706-02	2.314-02	1.926-02	1.554-02
12	16	2.543-01	2.548-01	2.563-01	2.588-01	2.628-01	2.687-01	2.770-01	2.891-01	3.060-01	3.281-01	3.529-01
12	17	2.606-01	2.621-01	2.643-01	2.674-01	2.720-01	2.784-01	2.876-01	3.007-01	3.190-01	3.429-01	3.697-01
12	18	1.554-03	1.517-03	1.475-03	1.431-03	1.382-03	1.322-03	1.247-03	1.150-03	1.030-03	8.902-04	7.387-04
12	19	1.708-02	1.700-02	1.688-02	1.673-02	1.653-02	1.625-02	1.586-02	1.535-02	1.471-02	1.400-02	1.322-02
12	20	6.556-03	6.525-03	6.472-03	6.388-03	6.254-03	6.051-03	5.754-03	5.340-03	4.804-03	4.163-03	3.460-03
12	21	6.175-05	5.005-05	3.868-05	2.867-05	2.067-05	1.474-05	1.057-05	7.746-06	5.889-06	4.719-06	4.011-06
12	22	3.123-03	2.165-03	1.457-03	9.623-04	6.281-04	4.076-04	2.645-04	1.727-04	1.143-04	7.773-05	5.500-05
12	23	3.581-03	2.891-03	2.165-03	1.552-03	1.091-03	7.677-04	5.509-04	4.105-04	3.228-04	2.701-04	2.393-04
12	24	4.666-04	3.380-04	2.388-04	1.651-04	1.123-04	7.574-05	5.089-05	3.420-05	2.302-05	1.551-05	1.045-05
12	25	6.015-05	4.779-05	3.709-05	2.845-05	2.194-05	1.736-05	1.436-05	1.262-05	1.188-05	1.199-05	1.270-05
12	26	1.136-04	9.281-05	7.451-05	5.980-05	4.882-05	4.110-05	3.599-05	3.293-05	3.144-05	3.124-05	3.191-05
12	27	1.041-04	8.987-05	7.558-05	6.322-05	5.375-05	4.734-05	4.381-05	4.297-05	4.471-05	4.900-05	5.531-05
12	28	1.973-04	1.775-04	1.564-04	1.375-04	1.229-04	1.136-04	1.103-04	1.136-04	1.241-04	1.427-04	1.684-04
12	29	1.314-04	1.185-04	1.047-04	9.232-05	8.288-05	7.702-05	7.502-05	7.711-05	8.350-05	9.457-05	1.094-04
12	30	7.568-06	6.342-06	5.181-06	4.192-06	3.405-06	2.795-06	2.315-06	1.922-06	1.589-06	1.299-06	1.046-06
12	31	1.091-04	9.471-05	7.984-05	6.670-05	5.651-05	4.966-05	4.624-05	4.641-05	5.040-05	5.869-05	7.089-05
12	32	2.826-04	2.562-04	2.273-04	2.011-04	1.801-04	1.642-04	1.524-04	1.431-04	1.351-04	1.275-04	1.191-04
12	33	8.582-05	7.306-05	6.017-05	4.884-05	3.962-05	3.234-05	2.652-05	2.170-05	1.760-05	1.405-05	1.101-05

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
12	34	3.366-05	2.993-05	2.691-05	2.451-05	2.257-05	2.090-05	1.937-05	1.792-05	1.656-05	1.532-05	1.421-05
12	35	1.747-05	1.578-05	1.415-05	1.271-05	1.144-05	1.028-05	9.149-06	8.003-06	6.821-06	5.626-06	4.470-06
12	36	4.895-05	4.247-05	3.727-05	3.323-05	3.005-05	2.737-05	2.497-05	2.273-05	2.065-05	1.884-05	1.730-05
12	37	7.124-05	6.774-05	6.506-05	6.293-05	6.117-05	5.970-05	5.851-05	5.763-05	5.709-05	5.687-05	5.663-05
12	38	6.823-05	6.154-05	5.664-05	5.339-05	5.146-05	5.057-05	5.059-05	5.159-05	5.380-05	5.747-05	6.211-05
12	39	1.296-05	1.164-05	1.063-05	9.846-06	9.194-06	8.599-06	8.013-06	7.415-06	6.809-06	6.216-06	5.644-06
12	40	4.699-05	4.505-05	4.342-05	4.192-05	4.041-05	3.885-05	3.723-05	3.558-05	3.395-05	3.237-05	3.076-05
12	41	1.996-04	1.976-04	1.963-04	1.955-04	1.953-04	1.955-04	1.961-04	1.966-04	1.964-04	1.947-04	1.897-04
12	42	3.163-04	3.176-04	3.187-04	3.196-04	3.209-04	3.231-04	3.266-04	3.317-04	3.382-04	3.456-04	3.509-04
12	43	5.618-05	5.608-05	5.609-05	5.627-05	5.668-05	5.737-05	5.841-05	5.985-05	6.166-05	6.367-05	6.524-05
12	44	1.458-05	1.456-05	1.457-05	1.463-05	1.475-05	1.499-05	1.539-05	1.599-05	1.683-05	1.789-05	1.898-05
12	45	2.626-05	2.591-05	2.537-05	2.458-05	2.345-05	2.192-05	1.998-05	1.765-05	1.505-05	1.235-05	9.753-06
12	46	5.090-05	5.017-05	4.904-05	4.738-05	4.501-05	4.182-05	3.777-05	3.299-05	2.778-05	2.251-05	1.757-05
13	14	1.220-01	1.169-01	1.093-01	1.000-01	9.035-02	8.093-02	7.196-02	6.327-02	5.472-02	4.633-02	3.833-02
13	15	6.095-02	6.270-02	6.093-02	5.597-02	4.917-02	4.194-02	3.513-02	2.899-02	2.352-02	1.864-02	1.436-02
13	16	9.310-01	9.457-01	9.636-01	9.852-01	1.012-00	1.045-00	1.087-00	1.145-00	1.224-00	1.328-00	1.447-00
13	17	6.224-01	6.293-01	6.380-01	6.493-01	6.643-01	6.841-01	7.104-01	7.472-01	7.983-01	8.651-01	9.410-01
13	18	2.330-01	2.344-01	2.369-01	2.405-01	2.457-01	2.528-01	2.623-01	2.758-01	2.946-01	3.192-01	3.471-01
13	19	1.802-03	1.688-03	1.551-03	1.409-03	1.271-03	1.138-03	1.005-03	8.679-04	7.289-04	5.929-04	4.665-04
13	20	1.481-02	1.492-02	1.505-02	1.522-02	1.548-02	1.586-02	1.639-02	1.715-02	1.822-02	1.960-02	2.113-02
13	21	7.070-05	5.953-05	4.704-05	3.537-05	2.576-05	1.848-05	1.328-05	9.670-06	7.193-06	5.484-06	4.271-06
13	22	2.244-03	1.594-03	1.097-03	7.376-04	4.888-04	3.215-04	2.111-04	1.393-04	9.297-05	6.310-05	4.377-05
13	23	3.131-03	2.488-03	1.827-03	1.274-03	8.606-04	5.699-04	3.735-04	2.440-04	1.598-04	1.056-04	7.062-05
13	24	2.569-03	1.723-03	1.140-03	7.469-04	4.868-04	3.169-04	2.069-04	1.361-04	9.054-05	6.125-05	4.234-05
13	25	1.053-04	8.783-05	6.941-05	5.311-05	4.015-05	3.044-05	2.334-05	1.812-05	1.419-05	1.114-05	8.736-06
13	26	1.379-04	1.118-04	8.800-05	6.825-05	5.305-05	4.184-05	3.365-05	2.755-05	2.283-05	1.902-05	1.584-05
13	27	1.691-04	1.358-04	1.044-04	7.870-05	5.927-05	4.524-05	3.527-05	2.811-05	2.277-05	1.861-05	1.520-05
13	28	1.156-04	9.652-05	7.713-05	5.993-05	4.610-05	3.565-05	2.796-05	2.227-05	1.797-05	1.460-05	1.188-05
13	29	1.980-04	1.444-04	1.051-04	7.680-05	5.685-05	4.311-05	3.374-05	2.731-05	2.278-05	1.945-05	1.682-05
13	30	7.154-05	6.712-05	6.232-05	5.786-05	5.408-05	5.096-05	4.828-05	4.579-05	4.323-05	4.039-05	3.709-05
13	31	1.608-04	1.471-04	1.336-04	1.217-04	1.119-04	1.040-04	9.734-05	9.124-05	8.509-05	7.844-05	7.088-05
13	32	3.330-04	3.071-04	2.802-04	2.562-04	2.367-04	2.213-04	2.085-04	1.967-04	1.844-04	1.708-04	1.550-04
13	33	8.727-05	7.641-05	6.590-05	5.680-05	4.937-05	4.334-05	3.826-05	3.377-05	2.966-05	2.592-05	2.260-05
13	34	6.138-05	5.409-05	4.830-05	4.369-05	3.986-05	3.641-05	3.303-05	2.958-05	2.607-05	2.261-05	1.930-05
13	35	2.594-05	2.484-05	2.387-05	2.313-05	2.269-05	2.259-05	2.290-05	2.370-05	2.507-05	2.710-05	2.961-05
13	36	9.194-05	8.190-05	7.384-05	6.753-05	6.244-05	5.803-05	5.390-05	4.979-05	4.558-05	4.128-05	3.684-05
13	37	8.441-05	7.928-05	7.530-05	7.204-05	6.911-05	6.621-05	6.315-05	5.983-05	5.620-05	5.228-05	4.793-05
13	38	5.596-05	4.791-05	4.172-05	3.711-05	3.358-05	3.056-05	2.762-05	2.454-05	2.134-05	1.817-05	1.521-05
13	39	9.220-05	9.010-05	8.849-05	8.730-05	8.634-05	8.537-05	8.409-05	8.227-05	7.969-05	7.612-05	7.119-05
13	40	1.108-04	1.076-04	1.052-04	1.034-04	1.019-04	1.005-04	9.880-05	9.657-05	9.351-05	8.935-05	8.366-05
13	41	2.458-04	2.410-04	2.375-04	2.351-04	2.335-04	2.320-04	2.299-04	2.263-04	2.204-04	2.115-04	1.982-04

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
13	42	1.238-04	1.232-04	1.229-04	1.228-04	1.229-04	1.231-04	1.232-04	1.227-04	1.215-04	1.189-04	1.142-04
13	43	6.481-05	6.469-05	6.469-05	6.481-05	6.504-05	6.536-05	6.568-05	6.588-05	6.580-05	6.515-05	6.337-05
13	44	1.794-05	1.798-05	1.802-05	1.805-05	1.809-05	1.815-05	1.824-05	1.833-05	1.839-05	1.834-05	1.801-05
13	45	1.591-05	1.588-05	1.582-05	1.576-05	1.567-05	1.558-05	1.550-05	1.544-05	1.540-05	1.540-05	1.536-05
13	46	4.576-05	4.515-05	4.421-05	4.282-05	4.085-05	3.819-05	3.482-05	3.085-05	2.653-05	2.221-05	1.821-05
14	15	4.190-01	4.220-01	3.944-01	3.442-01	2.854-01	2.307-01	1.869-01	1.552-01	1.343-01	1.219-01	1.150-01
14	16	7.660-02	7.180-02	6.721-02	6.362-02	6.127-02	6.008-02	5.991-02	6.080-02	6.289-02	6.618-02	7.024-02
14	17	2.305-02	1.942-02	1.627-02	1.381-02	1.199-02	1.064-02	9.590-03	8.712-03	7.930-03	7.213-03	6.551-03
14	18	7.019-03	5.778-03	4.735-03	3.934-03	3.339-03	2.889-03	2.525-03	2.203-03	1.893-03	1.586-03	1.286-03
14	19	2.222-00	2.230-00	2.247-00	2.274-00	2.315-00	2.375-00	2.460-00	2.581-00	2.752-00	2.974-00	3.223-00
14	20	5.802-04	5.792-04	5.760-04	5.688-04	5.561-04	5.368-04	5.099-04	4.751-04	4.329-04	3.851-04	3.338-04
14	21	1.607-04	1.325-04	1.029-04	7.588-05	5.385-05	3.726-05	2.543-05	1.727-05	1.172-05	7.958-06	5.405-06
14	22	6.225-04	5.250-04	4.091-04	3.011-04	2.137-04	1.489-04	1.034-04	7.270-05	5.245-05	3.942-05	3.115-05
14	23	8.791-04	7.047-04	5.318-04	3.836-04	2.685-04	1.848-04	1.264-04	8.657-05	5.964-05	4.140-05	2.894-05
14	24	1.342-02	8.910-03	5.849-03	3.810-03	2.471-03	1.603-03	1.046-03	6.914-04	4.688-04	3.313-04	2.476-04
14	25	2.982-04	2.558-04	2.101-04	1.697-04	1.384-04	1.168-04	1.041-04	9.920-05	1.015-04	1.105-04	1.248-04
14	26	2.516-04	2.033-04	1.595-04	1.233-04	9.568-05	7.542-05	6.086-05	5.033-05	4.253-05	3.655-05	3.175-05
14	27	5.614-04	4.559-04	3.542-04	2.699-04	2.067-04	1.631-04	1.357-04	1.216-04	1.184-04	1.245-04	1.375-04
14	28	1.691-04	1.398-04	1.123-04	8.859-05	6.962-05	5.497-05	4.371-05	3.491-05	2.786-05	2.211-05	1.741-05
14	29	4.968-04	3.582-04	2.613-04	1.943-04	1.492-04	1.199-04	1.026-04	9.435-05	9.369-05	9.969-05	1.107-04
14	30	3.112-05	2.523-05	2.015-05	1.605-05	1.288-05	1.046-05	8.546-06	6.963-06	5.598-06	4.401-06	3.365-06
14	31	1.004-04	8.338-05	6.712-05	5.327-05	4.229-05	3.385-05	2.728-05	2.197-05	1.750-05	1.365-05	1.036-05
14	32	2.228-04	1.993-04	1.766-04	1.571-04	1.415-04	1.294-04	1.201-04	1.126-04	1.065-04	1.015-04	9.692-05
14	33	1.102-03	1.048-03	9.905-04	9.379-04	8.956-04	8.647-04	8.437-04	8.303-04	8.220-04	8.165-04	8.082-04
14	34	1.858-04	1.772-04	1.704-04	1.651-04	1.610-04	1.578-04	1.552-04	1.533-04	1.518-04	1.507-04	1.492-04
14	35	1.432-05	1.229-05	1.033-05	8.648-06	7.286-06	6.209-06	5.357-06	4.679-06	4.144-06	3.724-06	3.378-06
14	36	9.806-05	8.763-05	7.874-05	7.145-05	6.539-05	5.994-05	5.459-05	4.903-05	4.320-05	3.728-05	3.149-05
14	37	3.735-04	3.686-04	3.648-04	3.620-04	3.601-04	3.592-04	3.595-04	3.611-04	3.640-04	3.678-04	3.697-04
14	38	1.014-04	8.799-05	7.695-05	6.869-05	6.257-05	5.742-05	5.215-05	4.615-05	3.940-05	3.232-05	2.549-05
14	39	3.702-05	3.329-05	3.013-05	2.737-05	2.480-05	2.224-05	1.959-05	1.687-05	1.416-05	1.159-05	9.293-06
14	40	2.075-04	2.037-04	2.002-04	1.972-04	1.945-04	1.924-04	1.906-04	1.895-04	1.889-04	1.888-04	1.882-04
14	41	9.189-05	8.302-05	7.516-05	6.837-05	6.222-05	5.619-05	4.988-05	4.317-05	3.624-05	2.946-05	2.324-05
14	42	7.543-05	7.130-05	6.764-05	6.435-05	6.118-05	5.791-05	5.439-05	5.062-05	4.672-05	4.290-05	3.923-05
14	43	2.864-05	2.643-05	2.453-05	2.285-05	2.121-05	1.947-05	1.752-05	1.533-05	1.297-05	1.057-05	8.300-06
14	44	8.775-06	8.085-06	7.521-06	7.039-06	6.582-06	6.095-06	5.539-06	4.898-06	4.190-06	3.457-06	2.754-06
14	45	2.605-05	2.599-05	2.594-05	2.589-05	2.588-05	2.596-05	2.621-05	2.674-05	2.762-05	2.885-05	3.005-05
14	46	5.879-04	5.884-04	5.890-04	5.895-04	5.900-04	5.901-04	5.892-04	5.862-04	5.797-04	5.677-04	5.460-04
15	16	4.812-02	4.395-02	3.933-02	3.513-02	3.181-02	2.946-02	2.798-02	2.730-02	2.737-02	2.814-02	2.940-02
15	17	5.067-02	4.751-02	4.444-02	4.190-02	4.012-02	3.913-02	3.887-02	3.939-02	4.079-02	4.307-02	4.595-02
15	18	8.588-03	7.254-03	6.021-03	4.975-03	4.146-03	3.515-03	3.035-03	2.656-03	2.340-03	2.066-03	1.822-03
15	19	5.552-01	5.530-01	5.525-01	5.551-01	5.622-01	5.746-01	5.937-01	6.224-01	6.638-01	7.186-01	7.812-01

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
15	20	6.469-01	6.524-01	6.587-01	6.670-01	6.790-01	6.960-01	7.201-01	7.549-01	8.035-01	8.666-01	9.367-01
15	21	7.198-05	5.647-05	4.235-05	3.057-05	2.145-05	1.480-05	1.013-05	6.931-06	4.750-06	3.263-06	2.243-06
15	22	2.522-03	2.104-03	1.597-03	1.139-03	7.814-04	5.244-04	3.485-04	2.318-04	1.560-04	1.074-04	7.641-05
15	23	9.370-04	7.106-04	5.142-04	3.598-04	2.463-04	1.666-04	1.122-04	7.571-05	5.129-05	3.490-05	2.380-05
15	24	1.003-01	6.613-02	4.299-02	2.770-02	1.774-02	1.133-02	7.232-03	4.625-03	2.974-03	1.932-03	1.275-03
15	25	1.658-03	1.412-03	1.080-03	7.716-04	5.278-04	3.516-04	2.305-04	1.498-04	9.690-05	6.260-05	4.044-05
15	26	1.059-04	8.883-05	7.074-05	5.446-05	4.130-05	3.132-05	2.394-05	1.845-05	1.430-05	1.110-05	8.619-06
15	27	4.415-03	3.325-03	2.350-03	1.596-03	1.056-03	6.887-04	4.449-04	2.861-04	1.836-04	1.179-04	7.580-05
15	28	1.485-04	1.254-04	1.017-04	8.040-05	6.290-05	4.925-05	3.874-05	3.052-05	2.389-05	1.843-05	1.390-05
15	29	6.294-03	4.018-03	2.560-03	1.629-03	1.036-03	6.593-04	4.199-04	2.679-04	1.714-04	1.099-04	7.069-05
15	30	8.415-05	6.095-05	4.533-05	3.490-05	2.803-05	2.362-05	2.095-05	1.955-05	1.917-05	1.966-05	2.076-05
15	31	5.871-05	4.996-05	4.097-05	3.302-05	2.658-05	2.156-05	1.763-05	1.446-05	1.181-05	9.546-06	7.617-06
15	32	1.304-04	1.060-04	8.402-05	6.587-05	5.185-05	4.136-05	3.359-05	2.785-05	2.367-05	2.085-05	1.920-05
15	33	3.946-04	3.399-04	2.864-04	2.395-04	2.019-04	1.738-04	1.534-04	1.393-04	1.302-04	1.256-04	1.247-04
15	34	4.803-05	4.239-05	3.748-05	3.350-05	3.037-05	2.783-05	2.566-05	2.367-05	2.178-05	1.998-05	1.823-05
15	35	6.207-04	6.063-04	5.920-04	5.801-04	5.724-04	5.700-04	5.742-04	5.862-04	6.069-04	6.369-04	6.723-04
15	36	6.063-05	5.245-05	4.517-05	3.920-05	3.440-05	3.037-05	2.673-05	2.321-05	1.976-05	1.646-05	1.342-05
15	37	7.703-05	7.183-05	6.708-05	6.325-05	6.031-05	5.802-05	5.606-05	5.421-05	5.232-05	5.033-05	4.798-05
15	38	9.354-05	7.836-05	6.582-05	5.647-05	4.974-05	4.449-05	3.963-05	3.451-05	2.902-05	2.344-05	1.817-05
15	39	2.337-05	2.182-05	2.050-05	1.934-05	1.828-05	1.725-05	1.621-05	1.520-05	1.425-05	1.345-05	1.276-05
15	40	5.795-05	5.342-05	4.942-05	4.607-05	4.319-05	4.055-05	3.795-05	3.528-05	3.256-05	2.988-05	2.724-05
15	41	5.306-05	4.912-05	4.547-05	4.205-05	3.864-05	3.502-05	3.105-05	2.677-05	2.236-05	1.809-05	1.423-05
15	42	4.732-05	4.490-05	4.274-05	4.077-05	3.880-05	3.668-05	3.430-05	3.164-05	2.878-05	2.580-05	2.278-05
15	43	2.348-05	2.210-05	2.093-05	1.988-05	1.884-05	1.772-05	1.646-05	1.503-05	1.347-05	1.187-05	1.029-05
15	44	6.917-06	6.430-06	6.031-06	5.688-06	5.360-06	5.013-06	4.622-06	4.177-06	3.684-06	3.166-06	2.651-06
15	45	3.144-04	3.142-04	3.138-04	3.135-04	3.133-04	3.138-04	3.152-04	3.177-04	3.212-04	3.251-04	3.269-04
15	46	2.779-04	2.809-04	2.851-04	2.906-04	2.972-04	3.047-04	3.124-04	3.195-04	3.250-04	3.276-04	3.241-04
16	17	9.948-02	9.648-02	9.339-02	9.031-02	8.710-02	8.349-02	7.924-02	7.421-02	6.849-02	6.235-02	5.605-02
16	18	2.341-02	2.258-02	2.179-02	2.108-02	2.043-02	1.977-02	1.908-02	1.835-02	1.761-02	1.691-02	1.624-02
16	19	1.029-01	1.020-01	1.006-01	9.855-02	9.555-02	9.130-02	8.551-02	7.807-02	6.914-02	5.923-02	4.904-02
16	20	1.237-02	1.226-02	1.209-02	1.182-02	1.143-02	1.086-02	1.008-02	9.087-03	7.912-03	6.638-03	5.366-03
16	21	2.682-04	2.201-04	1.712-04	1.264-04	8.952-05	6.155-05	4.156-05	2.778-05	1.848-05	1.227-05	8.123-06
16	22	6.092-02	4.313-02	2.944-02	1.959-02	1.280-02	8.278-03	5.317-03	3.407-03	2.188-03	1.416-03	9.314-04
16	23	3.311-01	2.617-01	1.905-01	1.317-01	8.805-02	5.770-02	3.735-02	2.402-02	1.542-02	9.941-03	6.473-03
16	24	2.288-01	1.510-01	9.813-02	6.312-02	4.034-02	2.568-02	1.631-02	1.035-02	6.576-03	4.188-03	2.681-03
16	25	5.000-04	3.844-04	2.850-04	2.056-04	1.463-04	1.040-04	7.451-05	5.412-05	3.990-05	2.986-05	2.266-05
16	26	8.584-04	6.946-04	5.404-04	4.112-04	3.122-04	2.408-04	1.910-04	1.571-04	1.343-04	1.193-04	1.092-04
16	27	6.573-04	5.244-04	3.984-04	2.938-04	2.142-04	1.565-04	1.156-04	8.662-05	6.571-05	5.025-05	3.858-05
16	28	1.942-03	1.600-03	1.260-03	9.642-04	7.313-04	5.590-04	4.356-04	3.480-04	2.855-04	2.409-04	2.086-04
16	29	8.471-04	6.521-04	4.925-04	3.669-04	2.729-04	2.049-04	1.563-04	1.213-04	9.544-05	7.580-05	6.057-05
16	30	6.146-05	4.971-05	3.951-05	3.133-05	2.520-05	2.082-05	1.778-05	1.572-05	1.439-05	1.360-05	1.315-05

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
16	31	6.112-04	5.088-04	4.072-04	3.185-04	2.480-04	1.952-04	1.564-04	1.276-04	1.057-04	8.886-05	7.554-05
16	32	3.493-03	3.084-03	2.671-03	2.313-03	2.035-03	1.835-03	1.698-03	1.609-03	1.553-03	1.520-03	1.494-03
16	33	1.437-03	1.309-03	1.163-03	1.026-03	9.121-04	8.255-04	7.617-04	7.149-04	6.802-04	6.541-04	6.312-04
16	34	2.329-04	1.862-04	1.494-04	1.214-04	1.005-04	8.435-05	7.116-05	5.981-05	4.975-05	4.091-05	3.335-05
16	35	6.554-05	5.494-05	4.601-05	3.897-05	3.355-05	2.928-05	2.571-05	2.253-05	1.956-05	1.681-05	1.432-05
16	36	7.341-04	6.538-04	5.912-04	5.462-04	5.162-04	4.989-04	4.931-04	4.995-04	5.190-04	5.530-04	5.978-04
16	37	3.920-04	3.400-04	3.006-04	2.713-04	2.492-04	2.317-04	2.170-04	2.042-04	1.934-04	1.851-04	1.793-04
16	38	6.734-04	5.795-04	5.059-04	4.489-04	4.026-04	3.618-04	3.230-04	2.847-04	2.472-04	2.124-04	1.816-04
16	39	9.539-05	7.827-05	6.576-05	5.683-05	5.042-05	4.564-05	4.184-05	3.864-05	3.589-05	3.359-05	3.165-05
16	40	4.481-04	4.120-04	3.839-04	3.602-04	3.381-04	3.150-04	2.892-04	2.602-04	2.288-04	1.971-04	1.668-04
16	41	5.524-03	5.566-03	5.605-03	5.650-03	5.719-03	5.840-03	6.048-03	6.382-03	6.875-03	7.554-03	8.365-03
16	42	2.036-03	2.047-03	2.058-03	2.071-03	2.094-03	2.136-03	2.212-03	2.336-03	2.521-03	2.778-03	3.087-03
16	43	4.393-04	4.383-04	4.374-04	4.367-04	4.372-04	4.401-04	4.476-04	4.624-04	4.872-04	5.249-04	5.726-04
16	44	3.997-05	3.879-05	3.749-05	3.595-05	3.400-05	3.149-05	2.836-05	2.468-05	2.063-05	1.654-05	1.272-05
16	45	1.490-04	1.473-04	1.448-04	1.409-04	1.355-04	1.281-04	1.187-04	1.076-04	9.563-05	8.386-05	7.320-05
16	46	1.074-03	1.071-03	1.067-03	1.063-03	1.060-03	1.062-03	1.075-03	1.103-03	1.155-03	1.235-03	1.339-03
17	18	4.080-02	3.955-02	3.825-02	3.690-02	3.539-02	3.358-02	3.132-02	2.853-02	2.521-02	2.150-02	1.764-02
17	19	7.219-02	7.154-02	7.054-02	6.905-02	6.689-02	6.381-02	5.961-02	5.420-02	4.769-02	4.042-02	3.293-02
17	20	1.033-02	1.024-02	1.009-02	9.866-03	9.528-03	9.039-03	8.371-03	7.516-03	6.501-03	5.395-03	4.285-03
17	21	8.330-04	7.280-04	5.840-04	4.422-04	3.248-04	2.377-04	1.784-04	1.416-04	1.221-04	1.158-04	1.185-04
17	22	1.514-01	1.037-01	6.902-02	4.506-02	2.907-02	1.862-02	1.187-02	7.554-03	4.807-03	3.067-03	1.968-03
17	23	9.476-03	7.139-03	5.090-03	3.500-03	2.355-03	1.567-03	1.044-03	7.050-04	4.915-04	3.622-04	2.880-04
17	24	1.040-02	6.971-03	4.603-03	3.006-03	1.947-03	1.254-03	8.061-04	5.184-04	3.346-04	2.178-04	1.439-04
17	25	5.876-04	4.961-04	3.952-04	3.030-04	2.286-04	1.731-04	1.332-04	1.051-04	8.533-05	7.143-05	6.153-05
17	26	7.409-04	6.016-04	4.701-04	3.576-04	2.693-04	2.037-04	1.560-04	1.212-04	9.532-05	7.566-05	6.044-05
17	27	1.183-03	9.449-04	7.263-04	5.480-04	4.140-04	3.186-04	2.529-04	2.084-04	1.786-04	1.587-04	1.448-04
17	28	3.823-04	3.345-04	2.774-04	2.226-04	1.770-04	1.422-04	1.169-04	9.880-05	8.609-05	7.738-05	7.140-05
17	29	1.354-03	1.043-03	7.860-04	5.850-04	4.363-04	3.314-04	2.597-04	2.116-04	1.798-04	1.589-04	1.444-04
17	30	1.429-04	1.225-04	1.003-04	8.005-05	6.349-05	5.069-05	4.087-05	3.311-05	2.671-05	2.125-05	1.654-05
17	31	1.394-03	1.280-03	1.167-03	1.070-03	9.944-04	9.403-04	9.044-04	8.827-04	8.720-04	8.689-04	8.655-04
17	32	4.652-04	3.899-04	3.115-04	2.429-04	1.886-04	1.480-04	1.181-04	9.590-05	7.889-05	6.555-05	5.484-05
17	33	3.063-04	2.494-04	1.973-04	1.548-04	1.223-04	9.802-05	7.969-05	6.522-05	5.322-05	4.297-05	3.417-05
17	34	2.844-04	2.448-04	2.140-04	1.907-04	1.726-04	1.576-04	1.446-04	1.329-04	1.225-04	1.140-04	1.075-04
17	35	3.058-05	2.505-05	2.046-05	1.689-05	1.416-05	1.203-05	1.028-05	8.708-06	7.239-06	5.851-06	4.571-06
17	36	2.748-04	2.423-04	2.160-04	1.947-04	1.762-04	1.588-04	1.410-04	1.224-04	1.034-04	8.500-05	6.813-05
17	37	1.029-03	1.004-03	9.874-04	9.777-04	9.749-04	9.811-04	1.001-03	1.039-03	1.101-03	1.191-03	1.302-03
17	38	2.193-04	1.845-04	1.583-04	1.388-04	1.238-04	1.113-04	1.003-04	9.012-05	8.081-05	7.277-05	6.608-05
17	39	7.196-04	7.137-04	7.102-04	7.086-04	7.096-04	7.151-04	7.281-04	7.522-04	7.911-04	8.483-04	9.189-04
17	40	1.988-03	2.005-03	2.024-03	2.046-03	2.078-03	2.132-03	2.223-03	2.365-03	2.571-03	2.852-03	3.184-03
17	41	2.062-04	1.903-04	1.781-04	1.679-04	1.582-04	1.476-04	1.356-04	1.219-04	1.071-04	9.209-05	7.775-05
17	42	6.661-04	6.703-04	6.735-04	6.766-04	6.816-04	6.911-04	7.091-04	7.393-04	7.853-04	8.502-04	9.282-04

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
17	43	6.028-04	6.079-04	6.130-04	6.194-04	6.295-04	6.467-04	6.751-04	7.194-04	7.834-04	8.703-04	9.737-04
17	44	1.762-04	1.772-04	1.789-04	1.815-04	1.857-04	1.925-04	2.031-04	2.188-04	2.411-04	2.710-04	3.065-04
17	45	7.649-05	7.591-05	7.501-05	7.369-05	7.185-05	6.944-05	6.651-05	6.328-05	6.012-05	5.756-05	5.580-05
17	46	1.327-04	1.309-04	1.281-04	1.239-04	1.179-04	1.098-04	9.928-05	8.673-05	7.289-05	5.884-05	4.569-05
18	19	2.444-02	2.423-02	2.389-02	2.338-02	2.265-02	2.161-02	2.020-02	1.837-02	1.616-02	1.370-02	1.116-02
18	20	3.282-03	3.253-03	3.206-03	3.134-03	3.026-03	2.869-03	2.654-03	2.379-03	2.054-03	1.700-03	1.346-03
18	21	1.439-04	1.279-04	1.042-04	7.961-05	5.825-05	4.155-05	2.930-05	2.060-05	1.448-05	1.017-05	7.109-06
18	22	2.663-03	2.016-03	1.472-03	1.044-03	7.268-04	5.040-04	3.543-04	2.581-04	2.001-04	1.691-04	1.561-04
18	23	2.596-04	2.079-04	1.575-04	1.136-04	7.892-05	5.338-05	3.551-05	2.340-05	1.534-05	1.003-05	6.540-06
18	24	4.354-03	2.863-03	1.863-03	1.202-03	7.704-04	4.917-04	3.128-04	1.987-04	1.261-04	7.999-05	5.075-05
18	25	3.915-04	3.358-04	2.684-04	2.046-04	1.523-04	1.125-04	8.349-05	6.238-05	4.679-05	3.501-05	2.593-05
18	26	1.935-04	1.677-04	1.402-04	1.153-04	9.512-05	8.007-05	6.931-05	6.186-05	5.693-05	5.398-05	5.230-05
18	27	5.049-04	3.948-04	2.926-04	2.106-04	1.500-04	1.071-04	7.722-05	5.638-05	4.149-05	3.054-05	2.231-05
18	28	4.128-05	3.538-05	2.825-05	2.154-05	1.605-05	1.190-05	8.861-06	6.636-06	4.977-06	3.711-06	2.731-06
18	29	6.320-04	4.175-04	2.750-04	1.807-04	1.187-04	7.827-05	5.197-05	3.482-05	2.353-05	1.600-05	1.091-05
18	30	6.868-04	6.289-04	5.635-04	5.034-04	4.551-04	4.197-04	3.956-04	3.805-04	3.721-04	3.685-04	3.657-04
18	31	6.070-05	5.215-05	4.271-05	3.412-05	2.715-05	2.176-05	1.763-05	1.436-05	1.164-05	9.303-06	7.274-06
18	32	9.386-05	7.758-05	6.137-05	4.765-05	3.710-05	2.940-05	2.389-05	1.991-05	1.700-05	1.485-05	1.322-05
18	33	5.788-05	4.632-05	3.617-05	2.808-05	2.199-05	1.749-05	1.410-05	1.142-05	9.190-06	7.280-06	5.642-06
18	34	1.790-04	1.521-04	1.305-04	1.136-04	1.000-04	8.817-05	7.695-05	6.576-05	5.455-05	4.369-05	3.372-05
18	35	1.160-05	1.016-05	8.971-06	8.056-06	7.372-06	6.859-06	6.464-06	6.150-06	5.894-06	5.682-06	5.483-06
18	36	1.136-04	9.960-05	8.933-05	8.165-05	7.554-05	7.025-05	6.536-05	6.078-05	5.669-05	5.336-05	5.079-05
18	37	1.806-04	1.628-04	1.494-04	1.386-04	1.285-04	1.180-04	1.062-04	9.297-05	7.870-05	6.416-05	5.031-05
18	38	1.194-05	1.114-05	1.042-05	9.747-06	9.039-06	8.242-06	7.328-06	6.307-06	5.228-06	4.166-06	3.193-06
18	39	1.593-03	1.614-03	1.634-03	1.655-03	1.683-03	1.728-03	1.802-03	1.917-03	2.084-03	2.310-03	2.578-03
18	40	4.201-05	4.112-05	4.006-05	3.869-05	3.688-05	3.448-05	3.141-05	2.770-05	2.354-05	1.922-05	1.506-05
18	41	1.750-05	1.708-05	1.666-05	1.621-05	1.566-05	1.498-05	1.415-05	1.317-05	1.212-05	1.106-05	1.007-05
18	42	7.164-06	6.897-06	6.634-06	6.357-06	6.038-06	5.651-06	5.176-06	4.610-06	3.972-06	3.299-06	2.639-06
18	43	1.687-05	1.678-05	1.667-05	1.654-05	1.640-05	1.626-05	1.614-05	1.607-05	1.609-05	1.625-05	1.649-05
18	44	1.211-06	1.168-06	1.126-06	1.080-06	1.026-06	9.577-07	8.726-07	7.704-07	6.550-07	5.343-07	4.178-07
18	45	1.416-05	1.407-05	1.394-05	1.375-05	1.352-05	1.326-05	1.298-05	1.277-05	1.269-05	1.284-05	1.322-05
18	46	3.027-05	2.984-05	2.919-05	2.823-05	2.685-05	2.498-05	2.259-05	1.975-05	1.664-05	1.351-05	1.061-05
19	20	3.875-02	3.883-02	3.891-02	3.902-02	3.920-02	3.949-02	3.997-02	4.073-02	4.186-02	4.339-02	4.497-02
19	21	6.633-04	5.602-04	4.444-04	3.334-04	2.396-04	1.672-04	1.147-04	7.802-05	5.290-05	3.580-05	2.417-05
19	22	3.768-02	3.227-02	2.476-02	1.771-02	1.212-02	8.070-03	5.288-03	3.439-03	2.236-03	1.467-03	9.804-04
19	23	4.365-02	3.387-02	2.443-02	1.681-02	1.122-02	7.349-03	4.758-03	3.060-03	1.961-03	1.255-03	8.044-04
19	24	1.732-00	1.138-00	7.363-01	4.722-01	3.011-01	1.913-01	1.213-01	7.683-02	4.867-02	3.088-02	1.967-02
19	25	2.123-03	1.787-03	1.384-03	1.017-03	7.252-04	5.124-04	3.640-04	2.631-04	1.952-04	1.497-04	1.192-04
19	26	1.189-03	1.002-03	8.074-04	6.338-04	4.946-04	3.896-04	3.123-04	2.552-04	2.120-04	1.786-04	1.519-04
19	27	4.909-03	3.761-03	2.720-03	1.894-03	1.291-03	8.724-04	5.905-04	4.041-04	2.821-04	2.029-04	1.513-04
19	28	9.637-04	7.995-04	6.415-04	5.037-04	3.930-04	3.081-04	2.435-04	1.934-04	1.533-04	1.201-04	9.241-05

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
19	29	5.831-03	3.811-03	2.489-03	1.626-03	1.065-03	7.023-04	4.682-04	3.166-04	2.180-04	1.534-04	1.106-04
19	30	1.782-04	1.369-04	1.046-04	8.006-05	6.211-05	4.912-05	3.959-05	3.231-05	2.652-05	2.176-05	1.781-05
19	31	3.788-04	3.138-04	2.507-04	1.966-04	1.539-04	1.215-04	9.691-05	7.757-05	6.172-05	4.832-05	3.696-05
19	32	1.178-03	1.028-03	8.849-04	7.631-04	6.683-04	5.986-04	5.485-04	5.126-04	4.866-04	4.674-04	4.507-04
19	33	3.497-03	3.216-03	2.849-03	2.479-03	2.166-03	1.931-03	1.768-03	1.664-03	1.602-03	1.571-03	1.551-03
19	34	1.091-03	1.031-03	9.850-04	9.515-04	9.289-04	9.168-04	9.163-04	9.299-04	9.609-04	1.013-03	1.080-03
19	35	1.153-04	9.775-05	8.038-05	6.574-05	5.470-05	4.707-05	4.224-05	3.961-05	3.877-05	3.940-05	4.091-05
19	36	8.122-04	7.442-04	6.857-04	6.383-04	6.005-04	5.695-04	5.435-04	5.222-04	5.070-04	5.009-04	5.033-04
19	37	1.840-03	1.821-03	1.809-03	1.806-03	1.815-03	1.843-03	1.897-03	1.988-03	2.122-03	2.308-03	2.528-03
19	38	7.232-04	6.294-04	5.477-04	4.807-04	4.256-04	3.773-04	3.316-04	2.857-04	2.393-04	1.938-04	1.513-04
19	39	2.111-04	1.944-04	1.802-04	1.677-04	1.562-04	1.445-04	1.321-04	1.189-04	1.054-04	9.252-05	8.104-05
19	40	1.014-03	9.923-04	9.742-04	9.607-04	9.532-04	9.534-04	9.644-04	9.903-04	1.035-03	1.103-03	1.188-03
19	41	8.564-04	8.209-04	7.892-04	7.626-04	7.411-04	7.246-04	7.147-04	7.137-04	7.252-04	7.529-04	7.939-04
19	42	2.667-04	2.452-04	2.264-04	2.096-04	1.933-04	1.761-04	1.571-04	1.362-04	1.142-04	9.240-05	7.217-05
19	43	1.594-04	1.493-04	1.403-04	1.320-04	1.236-04	1.144-04	1.041-04	9.280-05	8.102-05	6.970-05	5.963-05
19	44	4.847-05	4.540-05	4.266-05	4.004-05	3.729-05	3.417-05	3.055-05	2.646-05	2.208-05	1.770-05	1.364-05
19	45	2.936-04	2.941-04	2.949-04	2.963-04	2.989-04	3.038-04	3.122-04	3.257-04	3.456-04	3.733-04	4.060-04
19	46	4.694-03	4.701-03	4.715-03	4.746-03	4.813-03	4.941-03	5.164-03	5.519-03	6.036-03	6.739-03	7.573-03
20	21	2.169-04	1.828-04	1.446-04	1.084-04	7.813-05	5.490-05	3.809-05	2.631-05	1.816-05	1.254-05	8.632-06
20	22	4.401-02	3.660-02	2.761-02	1.955-02	1.328-02	8.798-03	5.735-03	3.706-03	2.387-03	1.541-03	1.003-03
20	23	2.532-02	1.829-02	1.263-02	8.470-03	5.571-03	3.619-03	2.334-03	1.500-03	9.621-04	6.167-04	3.951-04
20	24	5.354-00	3.486-00	2.246-00	1.437-00	9.147-01	5.806-01	3.679-01	2.328-01	1.473-01	9.320-02	5.906-02
20	25	6.779-02	5.793-02	4.429-02	3.156-02	2.152-02	1.426-02	9.287-03	5.983-03	3.828-03	2.439-03	1.550-03
20	26	7.344-04	6.072-04	4.742-04	3.578-04	2.662-04	1.981-04	1.487-04	1.127-04	8.565-05	6.487-05	4.857-05
20	27	2.047-01	1.537-01	1.083-01	7.325-02	4.831-02	3.136-02	2.015-02	1.287-02	8.184-03	5.194-03	3.291-03
20	28	8.150-04	6.947-04	5.624-04	4.416-04	3.431-04	2.673-04	2.099-04	1.656-04	1.302-04	1.011-04	7.696-05
20	29	3.095-01	1.967-01	1.247-01	7.897-02	4.996-02	3.160-02	1.998-02	1.264-02	7.993-03	5.058-03	3.202-03
20	30	5.009-03	3.208-03	2.055-03	1.318-03	8.485-04	5.501-04	3.607-04	2.404-04	1.640-04	1.154-04	8.427-05
20	31	4.260-04	3.654-04	2.943-04	2.279-04	1.736-04	1.322-04	1.014-04	7.832-05	6.047-05	4.626-05	3.478-05
20	32	8.144-04	6.361-04	4.790-04	3.532-04	2.594-04	1.924-04	1.453-04	1.119-04	8.787-05	7.017-05	5.693-05
20	33	6.607-04	5.472-04	4.403-04	3.509-04	2.836-04	2.369-04	2.074-04	1.911-04	1.849-04	1.864-04	1.923-04
20	34	1.969-04	1.689-04	1.447-04	1.250-04	1.088-04	9.486-05	8.196-05	6.945-05	5.721-05	4.557-05	3.501-05
20	35	2.708-03	2.418-03	2.138-03	1.902-03	1.724-03	1.599-03	1.517-03	1.468-03	1.444-03	1.436-03	1.431-03
20	36	2.703-04	2.379-04	2.098-04	1.864-04	1.665-04	1.481-04	1.301-04	1.117-04	9.302-05	7.479-05	5.800-05
20	37	2.515-04	2.150-04	1.823-04	1.552-04	1.331-04	1.145-04	9.782-05	8.210-05	6.709-05	5.309-05	4.059-05
20	38	4.157-04	3.703-04	3.324-04	3.007-04	2.727-04	2.457-04	2.177-04	1.880-04	1.570-04	1.263-04	9.780-05
20	39	3.046-04	2.878-04	2.756-04	2.674-04	2.626-04	2.612-04	2.636-04	2.710-04	2.843-04	3.050-04	3.311-04
20	40	2.572-04	2.280-04	2.032-04	1.825-04	1.644-04	1.472-04	1.298-04	1.115-04	9.276-05	7.439-05	5.743-05
20	41	2.391-04	2.081-04	1.839-04	1.646-04	1.478-04	1.318-04	1.154-04	9.824-05	8.079-05	6.398-05	4.885-05
20	42	3.605-04	3.314-04	3.074-04	2.865-04	2.663-04	2.446-04	2.201-04	1.925-04	1.627-04	1.323-04	1.035-04
20	43	3.000-04	2.752-04	2.559-04	2.399-04	2.250-04	2.095-04	1.925-04	1.737-04	1.537-04	1.340-04	1.158-04

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
20	44	1.099-04	9.946-05	9.147-05	8.492-05	7.885-05	7.253-05	6.546-05	5.749-05	4.882-05	3.992-05	3.139-05
20	45	5.892-03	5.915-03	5.950-03	6.011-03	6.117-03	6.301-03	6.601-03	7.060-03	7.711-03	8.584-03	9.608-03
20	46	1.125-04	1.127-04	1.130-04	1.136-04	1.146-04	1.164-04	1.196-04	1.248-04	1.324-04	1.426-04	1.538-04
21	22	7.867-01	6.675-01	5.202-01	3.818-01	2.699-01	1.870-01	1.285-01	8.813-02	6.055-02	4.161-02	2.853-02
21	23	2.559-01	2.128-01	1.643-01	1.210-01	8.709-02	6.253-02	4.548-02	3.391-02	2.613-02	2.092-02	1.739-02
21	24	5.435-01	4.143-01	2.983-01	2.072-01	1.411-01	9.535-02	6.451-02	4.394-02	3.018-02	2.086-02	1.445-02
21	25	5.271-01	5.382-01	5.796-01	6.445-01	7.202-01	7.988-01	8.777-01	9.555-01	1.028-00	1.086-00	1.116-00
21	26	4.782-02	3.807-02	2.949-02	2.241-02	1.690-02	1.273-02	9.581-03	7.186-03	5.337-03	3.904-03	2.801-03
21	27	8.950-01	9.326-01	1.019-00	1.136-00	1.265-00	1.395-00	1.525-00	1.657-00	1.784-00	1.894-00	1.959-00
21	28	7.911-03	5.749-03	4.052-03	2.794-03	1.902-03	1.288-03	8.740-04	5.960-04	4.094-04	2.837-04	1.987-04
21	29	1.513-01	1.597-01	1.740-01	1.915-01	2.094-01	2.271-01	2.451-01	2.644-01	2.842-01	3.024-01	3.144-01
21	30	3.691-03	3.263-03	2.816-03	2.401-03	2.033-03	1.707-03	1.414-03	1.146-03	9.055-04	6.946-04	5.169-04
21	31	1.935-01	2.024-01	2.193-01	2.399-01	2.610-01	2.821-01	3.040-01	3.277-01	3.529-01	3.770-01	3.944-01
21	32	6.823-03	5.739-03	4.659-03	3.723-03	2.963-03	2.358-03	1.870-03	1.467-03	1.131-03	8.527-04	6.270-04
21	33	7.519-03	5.881-03	4.474-03	3.363-03	2.524-03	1.901-03	1.434-03	1.077-03	8.001-04	5.845-04	4.185-04
21	34	7.886-02	7.928-02	7.992-02	8.048-02	8.087-02	8.118-02	8.158-02	8.216-02	8.284-02	8.365-02	8.455-02
21	35	4.923-04	4.391-04	3.867-04	3.381-04	2.934-04	2.514-04	2.112-04	1.729-04	1.373-04	1.054-04	7.832-05
21	36	1.161-02	1.082-02	1.012-02	9.408-03	8.631-03	7.743-03	6.739-03	5.657-03	4.567-03	3.543-03	2.647-03
21	37	7.992-02	8.083-02	8.173-02	8.260-02	8.348-02	8.446-02	8.563-02	8.703-02	8.849-02	9.001-02	9.144-02
21	38	3.513-04	2.500-04	1.780-04	1.284-04	9.462-05	7.163-05	5.573-05	4.450-05	3.642-05	3.052-05	2.610-05
21	39	5.275-03	5.139-03	4.959-03	4.717-03	4.397-03	3.988-03	3.500-03	2.956-03	2.397-03	1.866-03	1.398-03
21	40	3.494-02	3.528-02	3.561-02	3.596-02	3.635-02	3.683-02	3.743-02	3.815-02	3.892-02	3.969-02	4.039-02
21	41	1.740-03	1.691-03	1.627-03	1.544-03	1.436-03	1.300-03	1.139-03	9.610-04	7.789-04	6.064-04	4.545-04
21	42	2.700-04	2.554-04	2.407-04	2.252-04	2.079-04	1.881-04	1.658-04	1.418-04	1.174-04	9.438-05	7.385-05
21	43	9.104-05	8.234-05	7.489-05	6.842-05	6.239-05	5.631-05	4.986-05	4.299-05	3.590-05	2.894-05	2.253-05
21	44	1.613-04	1.571-04	1.535-04	1.502-04	1.469-04	1.433-04	1.389-04	1.337-04	1.274-04	1.203-04	1.124-04
21	45	5.933-04	5.812-04	5.632-04	5.374-04	5.021-04	4.564-04	4.013-04	3.398-04	2.763-04	2.157-04	1.621-04
21	46	2.272-03	2.224-03	2.151-03	2.048-03	1.908-03	1.729-03	1.514-03	1.276-03	1.033-03	8.030-04	6.007-04
22	23	3.197-00	2.554-00	1.891-00	1.334-00	9.154-01	6.201-01	4.194-01	2.854-01	1.967-01	1.379-01	9.867-02
22	24	5.244+01	3.475+01	2.264+01	1.459+01	9.335-00	5.950-00	3.784-00	2.404-00	1.528-00	9.726-01	6.205-01
22	25	1.435-00	1.446-00	1.477-00	1.545-00	1.646-00	1.769-00	1.907-00	2.053-00	2.194-00	2.307-00	2.362-00
22	26	2.850-00	2.899-00	3.028-00	3.243-00	3.516-00	3.824-00	4.157-00	4.505-00	4.845-00	5.131-00	5.296-00
22	27	4.027-01	3.403-01	2.913-01	2.593-01	2.414-01	2.337-01	2.337-01	2.391-01	2.476-01	2.563-01	2.609-01
22	28	4.548-02	3.523-02	2.606-02	1.862-02	1.301-02	8.994-03	6.192-03	4.260-03	2.929-03	2.009-03	1.373-03
22	29	7.191-01	6.292-01	5.962-01	5.986-01	6.198-01	6.518-01	6.922-01	7.398-01	7.915-01	8.405-01	8.731-01
22	30	5.796-01	6.172-01	6.786-01	7.521-01	8.267-01	8.999-01	9.745-01	1.053-00	1.135-00	1.211-00	1.262-00
22	31	1.327-01	1.356-01	1.436-01	1.542-01	1.654-01	1.769-01	1.892-01	2.028-01	2.175-01	2.316-01	2.415-01
22	32	5.556-01	5.460-01	5.630-01	5.958-01	6.364-01	6.819-01	7.326-01	7.892-01	8.492-01	9.063-01	9.470-01
22	33	6.658-02	6.382-02	6.233-02	6.186-02	6.231-02	6.370-02	6.622-02	7.005-02	7.521-02	8.197-02	9.032-02
22	34	1.292-01	1.275-01	1.265-01	1.257-01	1.248-01	1.237-01	1.227-01	1.218-01	1.211-01	1.207-01	1.206-01
22	35	1.708-02	1.860-02	2.002-02	2.117-02	2.208-02	2.295-02	2.402-02	2.550-02	2.743-02	2.988-02	3.282-02

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
22	36	2.315-01	2.354-01	2.389-01	2.413-01	2.427-01	2.435-01	2.445-01	2.461-01	2.481-01	2.506-01	2.533-01
22	37	5.130-02	5.062-02	4.993-02	4.917-02	4.827-02	4.719-02	4.596-02	4.467-02	4.335-02	4.215-02	4.114-02
22	38	3.044-03	2.523-03	2.112-03	1.789-03	1.524-03	1.294-03	1.084-03	8.872-04	7.064-04	5.462-04	4.108-04
22	39	1.209-01	1.223-01	1.235-01	1.245-01	1.254-01	1.264-01	1.275-01	1.290-01	1.306-01	1.323-01	1.339-01
22	40	4.803-02	4.823-02	4.840-02	4.852-02	4.864-02	4.879-02	4.900-02	4.931-02	4.966-02	5.006-02	5.044-02
22	41	3.887-02	3.920-02	3.942-02	3.953-02	3.959-02	3.964-02	3.979-02	4.005-02	4.040-02	4.081-02	4.121-02
22	42	7.913-03	7.861-03	7.824-03	7.800-03	7.790-03	7.793-03	7.812-03	7.848-03	7.890-03	7.940-03	7.984-03
22	43	1.541-03	1.484-03	1.430-03	1.378-03	1.323-03	1.264-03	1.201-03	1.134-03	1.065-03	1.000-03	9.387-04
22	44	2.470-04	2.205-04	1.978-04	1.783-04	1.603-04	1.424-04	1.239-04	1.047-04	8.547-05	6.732-05	5.116-05
22	45	3.491-03	3.463-03	3.420-03	3.358-03	3.271-03	3.157-03	3.019-03	2.864-03	2.703-03	2.549-03	2.411-03
22	46	1.669-02	1.658-02	1.642-02	1.620-02	1.589-02	1.552-02	1.508-02	1.462-02	1.416-02	1.375-02	1.337-02
23	24	1.236+01	8.397-00	5.581-00	3.656-00	2.375-00	1.536-00	9.929-01	6.429-01	4.175-01	2.721-01	1.780-01
23	25	8.671-02	6.472-02	4.684-02	3.339-02	2.389-02	1.747-02	1.329-02	1.063-02	8.956-03	7.878-03	7.101-03
23	26	5.706-01	5.157-01	4.977-01	5.083-01	5.363-01	5.742-01	6.179-01	6.639-01	7.074-01	7.416-01	7.568-01
23	27	1.554-01	1.357-01	1.238-01	1.187-01	1.184-01	1.212-01	1.261-01	1.324-01	1.389-01	1.442-01	1.462-01
23	28	4.105-00	4.317-00	4.695-00	5.192-00	5.745-00	6.322-00	6.919-00	7.525-00	8.100-00	8.571-00	8.827-00
23	29	2.438-01	2.334-01	2.327-01	2.389-01	2.491-01	2.619-01	2.771-01	2.945-01	3.126-01	3.286-01	3.375-01
23	30	9.271-03	6.938-03	5.105-03	3.729-03	2.728-03	2.010-03	1.490-03	1.106-03	8.161-04	5.946-04	4.260-04
23	31	1.520-00	1.586-00	1.718-00	1.882-00	2.053-00	2.226-00	2.406-00	2.599-00	2.795-00	2.973-00	3.086-00
23	32	2.727-00	2.803-00	3.001-00	3.260-00	3.538-00	3.825-00	4.130-00	4.458-00	4.794-00	5.101-00	5.298-00
23	33	2.666-01	2.697-01	2.803-01	2.939-01	3.084-01	3.240-01	3.418-01	3.626-01	3.856-01	4.082-01	4.243-01
23	34	9.425-03	7.455-03	5.898-03	4.750-03	3.942-03	3.391-03	3.024-03	2.785-03	2.631-03	2.537-03	2.485-03
23	35	8.983-03	7.695-03	6.483-03	5.430-03	4.542-03	3.783-03	3.117-03	2.520-03	1.986-03	1.521-03	1.131-03
23	36	4.633-02	4.297-02	4.036-02	3.832-02	3.663-02	3.519-02	3.398-02	3.300-02	3.221-02	3.162-02	3.124-02
23	37	1.884-02	1.537-02	1.268-02	1.061-02	8.966-03	7.587-03	6.357-03	5.225-03	4.188-03	3.268-03	2.488-03
23	38	3.634-01	3.683-01	3.716-01	3.726-01	3.717-01	3.699-01	3.686-01	3.688-01	3.701-01	3.726-01	3.760-01
23	39	6.209-03	5.338-03	4.686-03	4.199-03	3.817-03	3.498-03	3.212-03	2.950-03	2.708-03	2.495-03	2.317-03
23	40	4.004-02	3.843-02	3.704-02	3.570-02	3.431-02	3.280-02	3.117-02	2.950-02	2.787-02	2.637-02	2.510-02
23	41	2.709-01	2.736-01	2.754-01	2.762-01	2.765-01	2.767-01	2.776-01	2.794-01	2.818-01	2.848-01	2.879-01
23	42	1.884-01	1.895-01	1.903-01	1.911-01	1.918-01	1.926-01	1.939-01	1.956-01	1.977-01	1.999-01	2.020-01
23	43	1.177-01	1.186-01	1.192-01	1.197-01	1.201-01	1.206-01	1.213-01	1.224-01	1.236-01	1.250-01	1.263-01
23	44	3.885-02	3.921-02	3.945-02	3.958-02	3.964-02	3.970-02	3.984-02	4.009-02	4.041-02	4.080-02	4.118-02
23	45	1.225-02	1.200-02	1.162-02	1.108-02	1.034-02	9.386-03	8.243-03	6.974-03	5.671-03	4.434-03	3.344-03
23	46	3.082-02	3.016-02	2.920-02	2.784-02	2.600-02	2.367-02	2.092-02	1.790-02	1.483-02	1.194-02	9.411-03
24	25	4.790-00	4.126-00	3.217-00	2.381-00	1.732-00	1.273-00	9.677-01	7.723-01	6.489-01	5.691-01	5.116-01
24	26	3.019-01	2.661-01	2.435-01	2.342-01	2.350-01	2.427-01	2.547-01	2.686-01	2.817-01	2.910-01	2.933-01
24	27	1.376+01	1.052+01	7.674-00	5.527-00	4.037-00	3.060-00	2.449-00	2.083-00	1.871-00	1.743-00	1.644-00
24	28	9.815-02	7.963-02	6.278-02	4.870-02	3.757-02	2.899-02	2.233-02	1.709-02	1.290-02	9.563-03	6.933-03
24	29	2.011+01	1.316+01	8.796-00	6.084-00	4.417-00	3.411-00	2.825-00	2.506-00	2.345-00	2.266-00	2.203-00
24	30	2.566-01	1.714-01	1.182-01	8.548-02	6.573-02	5.415-02	4.779-02	4.473-02	4.363-02	4.340-02	4.302-02
24	31	8.347-02	7.755-02	7.433-02	7.329-02	7.371-02	7.523-02	7.771-02	8.101-02	8.471-02	8.806-02	8.976-02

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
24	32	2.029-01	1.843-01	1.741-01	1.705-01	1.717-01	1.763-01	1.837-01	1.933-01	2.037-01	2.130-01	2.182-01
24	33	2.969-00	3.060-00	3.256-00	3.499-00	3.764-00	4.048-00	4.360-00	4.703-00	5.059-00	5.386-00	5.608-00
24	34	1.563-02	1.350-02	1.172-02	1.034-02	9.315-03	8.574-03	8.054-03	7.698-03	7.453-03	7.297-03	7.218-03
24	35	5.662-01	6.326-01	6.958-01	7.505-01	7.984-01	8.459-01	9.010-01	9.706-01	1.057-00	1.163-00	1.291-00
24	36	2.417-02	2.260-02	2.122-02	2.000-02	1.887-02	1.784-02	1.689-02	1.606-02	1.535-02	1.477-02	1.434-02
24	37	9.072-02	8.880-02	8.680-02	8.508-02	8.381-02	8.306-02	8.288-02	8.324-02	8.391-02	8.486-02	8.602-02
24	38	3.275-02	3.023-02	2.778-02	2.537-02	2.289-02	2.025-02	1.745-02	1.454-02	1.169-02	9.045-03	6.748-03
24	39	6.228-03	5.601-03	5.068-03	4.632-03	4.273-03	3.969-03	3.707-03	3.479-03	3.280-03	3.114-03	2.983-03
24	40	1.135-01	1.120-01	1.104-01	1.091-01	1.082-01	1.076-01	1.075-01	1.079-01	1.087-01	1.097-01	1.109-01
24	41	2.201-02	2.043-02	1.890-02	1.740-02	1.583-02	1.412-02	1.225-02	1.026-02	8.283-03	6.433-03	4.818-03
24	42	2.782-02	2.577-02	2.398-02	2.243-02	2.100-02	1.960-02	1.819-02	1.678-02	1.541-02	1.417-02	1.310-02
24	43	1.140-02	1.034-02	9.401-03	8.545-03	7.715-03	6.856-03	5.947-03	5.002-03	4.067-03	3.196-03	2.436-03
24	44	3.753-03	3.403-03	3.093-03	2.810-03	2.533-03	2.244-03	1.936-03	1.617-03	1.302-03	1.009-03	7.532-04
24	45	1.151-01	1.154-01	1.155-01	1.159-01	1.164-01	1.173-01	1.187-01	1.206-01	1.228-01	1.251-01	1.272-01
24	46	2.754-01	2.746-01	2.736-01	2.724-01	2.716-01	2.717-01	2.732-01	2.763-01	2.804-01	2.851-01	2.896-01
25	26	3.991-00	3.592-00	2.881-00	2.154-00	1.551-00	1.102-00	7.866-01	5.720-01	4.285-01	3.331-01	2.688-01
25	27	3.232+01	2.433+01	1.720+01	1.170+01	7.775-00	5.108-00	3.343-00	2.195-00	1.457-00	9.849-01	6.831-01
25	28	3.367-02	2.684-02	2.018-02	1.464-02	1.044-02	7.420-03	5.309-03	3.843-03	2.815-03	2.086-03	1.559-03
25	29	4.649+01	2.955+01	1.874+01	1.187+01	7.517-00	4.758-00	3.013-00	1.910-00	1.214-00	7.737-01	4.956-01
25	30	6.040-01	3.990-01	2.624-01	1.721-01	1.129-01	7.440-02	4.933-02	3.296-02	2.219-02	1.502-02	1.019-02
25	31	5.702-02	4.870-02	4.078-02	3.412-02	2.892-02	2.500-02	2.200-02	1.962-02	1.763-02	1.591-02	1.437-02
25	32	5.426-01	3.760-01	2.591-01	1.801-01	1.277-01	9.321-02	7.050-02	5.533-02	4.497-02	3.766-02	3.223-02
25	33	5.444-02	4.792-02	4.249-02	3.809-02	3.464-02	3.197-02	2.992-02	2.835-02	2.710-02	2.606-02	2.504-02
25	34	1.896-00	2.182-00	2.474-00	2.747-00	2.999-00	3.243-00	3.496-00	3.762-00	4.028-00	4.259-00	4.400-00
25	35	4.034-02	3.590-02	2.877-02	2.144-02	1.527-02	1.061-02	7.282-03	4.979-03	3.406-03	2.331-03	1.594-03
25	36	4.203-02	4.036-02	3.868-02	3.687-02	3.482-02	3.250-02	2.997-02	2.739-02	2.496-02	2.285-02	2.110-02
25	37	5.906-02	6.073-02	6.229-02	6.367-02	6.498-02	6.638-02	6.809-02	7.023-02	7.285-02	7.565-02	7.757-02
25	38	3.037-03	2.307-03	1.713-03	1.263-03	9.361-04	6.997-04	5.271-04	3.984-04	3.009-04	2.268-04	1.708-04
25	39	4.169-01	4.592-01	4.960-01	5.269-01	5.545-01	5.828-01	6.154-01	6.538-01	6.970-01	7.397-01	7.701-01
25	40	3.565-02	3.660-02	3.735-02	3.796-02	3.855-02	3.929-02	4.033-02	4.174-02	4.349-02	4.531-02	4.661-02
25	41	8.465-03	8.038-03	7.616-03	7.189-03	6.738-03	6.250-03	5.732-03	5.209-03	4.721-03	4.300-03	3.950-03
25	42	1.146-02	1.152-02	1.164-02	1.181-02	1.206-02	1.242-02	1.294-02	1.369-02	1.468-02	1.595-02	1.753-02
25	43	6.231-03	6.320-03	6.411-03	6.507-03	6.626-03	6.801-03	7.074-03	7.479-03	8.022-03	8.734-03	9.615-03
25	44	4.003-03	4.105-03	4.202-03	4.298-03	4.408-03	4.557-03	4.775-03	5.086-03	5.491-03	6.010-03	6.643-03
25	45	1.497-01	1.504-01	1.511-01	1.523-01	1.544-01	1.584-01	1.651-01	1.751-01	1.884-01	2.055-01	2.259-01
25	46	1.072-02	1.061-02	1.044-02	1.020-02	9.896-03	9.533-03	9.148-03	8.785-03	8.484-03	8.272-03	8.136-03
26	27	4.610-01	3.768-01	2.931-01	2.220-01	1.670-01	1.263-01	9.642-02	7.422-02	5.729-02	4.409-02	3.368-02
26	28	3.129-01	2.837-01	2.554-01	2.309-01	2.105-01	1.932-01	1.781-01	1.644-01	1.517-01	1.400-01	1.289-01
26	29	5.687-01	4.645-01	3.856-01	3.276-01	2.861-01	2.569-01	2.366-01	2.224-01	2.124-01	2.054-01	1.991-01
26	30	9.538-02	9.095-02	8.696-02	8.373-02	8.113-02	7.901-02	7.728-02	7.592-02	7.485-02	7.396-02	7.273-02
26	31	1.042-01	8.507-02	6.622-02	5.012-02	3.757-02	2.828-02	2.153-02	1.661-02	1.296-02	1.022-02	8.110-03

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
26	32	7.988-01	5.611-01	3.912-01	2.745-01	1.962-01	1.445-01	1.104-01	8.804-02	7.322-02	6.327-02	5.625-02
26	33	8.355-02	6.906-02	5.642-02	4.627-02	3.846-02	3.245-02	2.767-02	2.367-02	2.015-02	1.696-02	1.405-02
26	34	3.686-01	4.116-01	4.570-01	4.990-01	5.367-01	5.728-01	6.099-01	6.489-01	6.869-01	7.183-01	7.342-01
26	35	7.011-03	6.238-03	5.550-03	4.966-03	4.476-03	4.049-03	3.653-03	3.268-03	2.886-03	2.513-03	2.158-03
26	36	3.337-00	3.802-00	4.260-00	4.688-00	5.096-00	5.506-00	5.938-00	6.394-00	6.843-00	7.223-00	7.442-00
26	37	6.800-02	7.201-02	7.547-02	7.796-02	7.954-02	8.063-02	8.172-02	8.309-02	8.469-02	8.603-02	8.620-02
26	38	2.182-02	1.997-02	1.840-02	1.702-02	1.574-02	1.445-02	1.309-02	1.170-02	1.035-02	9.130-03	8.080-03
26	39	6.080-02	6.437-02	6.733-02	6.961-02	7.145-02	7.330-02	7.560-02	7.858-02	8.220-02	8.597-02	8.866-02
26	40	4.418-01	4.804-01	5.133-01	5.408-01	5.660-01	5.929-01	6.250-01	6.636-01	7.064-01	7.473-01	7.753-01
26	41	2.753-02	2.764-02	2.766-02	2.756-02	2.737-02	2.716-02	2.703-02	2.707-02	2.728-02	2.758-02	2.772-02
26	42	5.642-02	5.822-02	5.988-02	6.143-02	6.310-02	6.515-02	6.780-02	7.116-02	7.518-02	7.943-02	8.258-02
26	43	1.027-01	1.072-01	1.107-01	1.134-01	1.159-01	1.191-01	1.236-01	1.299-01	1.376-01	1.458-01	1.519-01
26	44	1.535-03	1.489-03	1.431-03	1.355-03	1.256-03	1.134-03	9.915-04	8.352-04	6.764-04	5.269-04	3.954-04
26	45	6.453-03	6.316-03	6.113-03	5.824-03	5.433-03	4.937-03	4.349-03	3.705-03	3.054-03	2.444-03	1.914-03
26	46	2.136-02	2.088-02	2.016-02	1.915-02	1.779-02	1.605-02	1.401-02	1.177-02	9.515-03	7.410-03	5.581-03
27	28	1.259-01	1.169-01	1.077-01	9.942-02	9.220-02	8.587-02	8.015-02	7.484-02	6.987-02	6.527-02	6.088-02
27	29	9.251+01	5.880+01	3.731+01	2.365+01	1.498+01	9.499-00	6.030-00	3.837-00	2.450-00	1.574-00	1.020-00
27	30	1.041-00	6.644-01	4.238-01	2.703-01	1.726-01	1.104-01	7.083-02	4.553-02	2.932-02	1.890-02	1.217-02
27	31	9.438-02	7.853-02	6.249-02	4.833-02	3.704-02	2.862-02	2.258-02	1.830-02	1.528-02	1.313-02	1.153-02
27	32	1.030-01	8.117-02	6.320-02	4.935-02	3.911-02	3.167-02	2.623-02	2.214-02	1.895-02	1.638-02	1.421-02
27	33	1.422-01	1.269-01	1.129-01	1.011-01	9.168-02	8.442-02	7.889-02	7.470-02	7.146-02	6.885-02	6.633-02
27	34	1.482-01	1.616-01	1.763-01	1.902-01	2.031-01	2.156-01	2.286-01	2.426-01	2.563-01	2.679-01	2.740-01
27	35	9.293-02	8.268-02	6.633-02	4.958-02	3.549-02	2.482-02	1.719-02	1.189-02	8.247-03	5.729-03	3.975-03
27	36	3.122-02	2.804-02	2.534-02	2.290-02	2.055-02	1.814-02	1.563-02	1.309-02	1.064-02	8.406-03	6.492-03
27	37	2.145-00	2.445-00	2.725-00	2.971-00	3.193-00	3.411-00	3.645-00	3.899-00	4.158-00	4.386-00	4.523-00
27	38	1.308-02	1.134-02	9.849-03	8.614-03	7.581-03	6.684-03	5.876-03	5.143-03	4.496-03	3.948-03	3.498-03
27	39	3.441-02	3.605-02	3.734-02	3.820-02	3.872-02	3.906-02	3.942-02	3.994-02	4.063-02	4.131-02	4.148-02
27	40	2.459-02	2.259-02	2.074-02	1.916-02	1.784-02	1.671-02	1.579-02	1.506-02	1.454-02	1.424-02	1.404-02
27	41	1.363-02	1.267-02	1.175-02	1.082-02	9.843-03	8.767-03	7.589-03	6.348-03	5.114-03	3.967-03	2.968-03
27	42	2.947-02	2.964-02	2.980-02	2.996-02	3.017-02	3.053-02	3.116-02	3.212-02	3.333-02	3.459-02	3.543-02
27	43	9.457-02	9.812-02	1.013-01	1.043-01	1.074-01	1.113-01	1.164-01	1.230-01	1.307-01	1.386-01	1.444-01
27	44	5.621-02	5.832-02	6.021-02	6.196-02	6.384-02	6.624-02	6.945-02	7.359-02	7.848-02	8.353-02	8.729-02
27	45	3.434-01	3.459-01	3.488-01	3.530-01	3.598-01	3.708-01	3.880-01	4.130-01	4.456-01	4.871-01	5.372-01
27	46	1.619-02	1.609-02	1.593-02	1.571-02	1.545-02	1.515-02	1.488-02	1.469-02	1.461-02	1.467-02	1.481-02
28	29	2.265-01	2.142-01	2.005-01	1.870-01	1.747-01	1.635-01	1.532-01	1.436-01	1.348-01	1.269-01	1.193-01
28	30	7.875-03	6.434-03	5.086-03	3.955-03	3.070-03	2.399-03	1.890-03	1.496-03	1.179-03	9.184-04	7.018-04
28	31	3.064-01	2.910-01	2.776-01	2.666-01	2.572-01	2.491-01	2.423-01	2.368-01	2.324-01	2.286-01	2.240-01
28	32	1.386-00	1.050-00	7.927-01	6.042-01	4.711-01	3.794-01	3.170-01	2.748-01	2.463-01	2.268-01	2.120-01
28	33	1.499-01	1.298-01	1.097-01	9.201-02	7.740-02	6.559-02	5.595-02	4.785-02	4.086-02	3.476-02	2.940-02
28	34	1.104-02	8.618-03	6.766-03	5.449-03	4.571-03	4.025-03	3.719-03	3.577-03	3.527-03	3.509-03	3.465-03
28	35	1.776-02	1.523-02	1.300-02	1.114-02	9.615-03	8.339-03	7.214-03	6.173-03	5.181-03	4.237-03	3.360-03

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
28	36	1.967-01	2.014-01	2.095-01	2.194-01	2.307-01	2.436-01	2.582-01	2.741-01	2.893-01	3.011-01	3.061-01
28	37	4.159-02	3.403-02	2.860-02	2.477-02	2.205-02	2.008-02	1.865-02	1.761-02	1.683-02	1.618-02	1.548-02
28	38	4.991-00	5.535-00	6.049-00	6.536-00	7.019-00	7.529-00	8.085-00	8.680-00	9.266-00	9.761-00	1.003+01
28	39	4.967-03	4.142-03	3.512-03	3.025-03	2.625-03	2.272-03	1.941-03	1.625-03	1.330-03	1.067-03	8.438-04
28	40	3.314-02	3.109-02	2.929-02	2.757-02	2.578-02	2.384-02	2.176-02	1.963-02	1.758-02	1.569-02	1.398-02
28	41	1.363-00	1.446-00	1.520-00	1.587-00	1.655-00	1.732-00	1.827-00	1.942-00	2.065-00	2.179-00	2.252-00
28	42	3.517-01	3.671-01	3.797-01	3.899-01	3.998-01	4.119-01	4.285-01	4.504-01	4.758-01	5.005-01	5.172-01
28	43	2.946-02	2.927-02	2.902-02	2.870-02	2.833-02	2.794-02	2.762-02	2.746-02	2.755-02	2.791-02	2.836-02
28	44	1.037-02	1.032-02	1.025-02	1.017-02	1.009-02	1.001-02	9.970-03	9.993-03	1.011-02	1.032-02	1.055-02
28	45	1.856-02	1.816-02	1.754-02	1.668-02	1.550-02	1.400-02	1.223-02	1.028-02	8.299-03	6.438-03	4.810-03
28	46	5.897-02	5.787-02	5.624-02	5.395-02	5.088-02	4.705-02	4.262-02	3.793-02	3.337-02	2.940-02	2.631-02
29	30	1.017-00	6.538-01	4.193-01	2.685-01	1.718-01	1.101-01	7.072-02	4.555-02	2.943-02	1.906-02	1.237-02
29	31	4.610-01	3.774-01	2.874-01	2.074-01	1.442-01	9.805-02	6.582-02	4.390-02	2.921-02	1.943-02	1.296-02
29	32	2.040-01	1.668-01	1.285-01	9.512-02	6.902-02	4.976-02	3.593-02	2.605-02	1.895-02	1.378-02	1.000-02
29	33	1.845-01	1.623-01	1.430-01	1.270-01	1.143-01	1.044-01	9.670-02	9.080-02	8.618-02	8.244-02	7.893-02
29	34	2.362-02	1.928-02	1.573-02	1.302-02	1.105-02	9.639-03	8.652-03	7.978-03	7.547-03	7.307-03	7.168-03
29	35	1.175-01	1.053-01	8.528-02	6.462-02	4.714-02	3.378-02	2.411-02	1.725-02	1.241-02	8.942-03	6.427-03
29	36	3.685-02	3.070-02	2.598-02	2.254-02	2.014-02	1.850-02	1.745-02	1.685-02	1.663-02	1.670-02	1.689-02
29	37	2.971-02	2.475-02	2.036-02	1.682-02	1.412-02	1.211-02	1.061-02	9.523-03	8.755-03	8.248-03	7.903-03
29	38	3.762-02	3.223-02	2.795-02	2.453-02	2.167-02	1.912-02	1.677-02	1.457-02	1.258-02	1.085-02	9.407-03
29	39	2.491-01	2.763-01	3.009-01	3.226-01	3.430-01	3.641-01	3.874-01	4.133-01	4.397-01	4.629-01	4.761-01
29	40	1.677-00	1.833-00	1.972-00	2.096-00	2.215-00	2.343-00	2.489-00	2.654-00	2.825-00	2.977-00	3.068-00
29	41	1.903-02	1.759-02	1.625-02	1.491-02	1.350-02	1.195-02	1.027-02	8.526-03	6.816-03	5.246-03	3.896-03
29	42	6.617-01	6.908-01	7.185-01	7.453-01	7.742-01	8.086-01	8.514-01	9.029-01	9.592-01	1.012-00	1.046-00
29	43	2.628-01	2.729-01	2.825-01	2.919-01	3.021-01	3.146-01	3.304-01	3.498-01	3.714-01	3.922-01	4.060-01
29	44	9.779-02	1.015-01	1.049-01	1.081-01	1.116-01	1.160-01	1.216-01	1.285-01	1.364-01	1.441-01	1.492-01
29	45	4.388-01	4.424-01	4.466-01	4.526-01	4.620-01	4.766-01	4.977-01	5.257-01	5.593-01	5.943-01	6.206-01
29	46	2.084-02	2.060-02	2.024-02	1.973-02	1.908-02	1.828-02	1.740-02	1.652-02	1.575-02	1.515-02	1.469-02
30	31	4.607-02	4.049-02	3.546-02	3.119-02	2.757-02	2.437-02	2.137-02	1.843-02	1.552-02	1.268-02	1.001-02
30	32	4.947-02	4.813-02	4.697-02	4.593-02	4.490-02	4.383-02	4.271-02	4.160-02	4.053-02	3.954-02	3.845-02
30	33	1.298-02	1.165-02	1.041-02	9.303-03	8.319-03	7.403-03	6.507-03	5.606-03	4.701-03	3.821-03	3.005-03
30	34	1.840-02	1.519-02	1.272-02	1.081-02	9.251-03	7.882-03	6.609-03	5.403-03	4.281-03	3.278-03	2.427-03
30	35	2.757-03	2.410-03	2.029-03	1.676-03	1.379-03	1.136-03	9.344-04	7.624-04	6.116-04	4.790-04	3.648-04
30	36	1.487-02	1.400-02	1.340-02	1.302-02	1.280-02	1.272-02	1.280-02	1.303-02	1.343-02	1.400-02	1.457-02
30	37	1.268-02	1.135-02	1.030-02	9.354-03	8.411-03	7.413-03	6.351-03	5.262-03	4.204-03	3.237-03	2.406-03
30	38	1.607-03	1.528-03	1.448-03	1.358-03	1.252-03	1.127-03	9.825-04	8.259-04	6.673-04	5.180-04	3.871-04
30	39	8.975-01	1.002-00	1.097-00	1.182-00	1.263-00	1.347-00	1.439-00	1.540-00	1.641-00	1.728-00	1.778-00
30	40	3.607-03	3.530-03	3.406-03	3.224-03	2.977-03	2.667-03	2.309-03	1.925-03	1.544-03	1.192-03	8.881-04
30	41	3.124-03	3.083-03	3.028-03	2.959-03	2.871-03	2.769-03	2.660-03	2.554-03	2.464-03	2.398-03	2.348-03
30	42	8.323-04	7.856-04	7.369-04	6.835-04	6.225-04	5.527-04	4.755-04	3.947-04	3.157-04	2.435-04	1.815-04
30	43	2.853-03	2.893-03	2.941-03	2.995-03	3.058-03	3.133-03	3.227-03	3.339-03	3.465-03	3.582-03	3.646-03

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
30	44	3.584-04	3.445-04	3.287-04	3.095-04	2.857-04	2.568-04	2.232-04	1.869-04	1.504-04	1.164-04	8.671-05
30	45	2.514-03	2.524-03	2.535-03	2.547-03	2.564-03	2.589-03	2.625-03	2.676-03	2.745-03	2.820-03	2.866-03
30	46	2.338-03	2.277-03	2.189-03	2.065-03	1.903-03	1.701-03	1.470-03	1.224-03	9.812-04	7.582-04	5.667-04
31	32	3.304-01	2.973-01	2.600-01	2.253-01	1.963-01	1.732-01	1.550-01	1.405-01	1.287-01	1.191-01	1.105-01
31	33	1.230-01	1.043-01	8.772-02	7.404-02	6.316-02	5.446-02	4.728-02	4.113-02	3.573-02	3.096-02	2.675-02
31	34	2.062-02	1.652-02	1.316-02	1.062-02	8.770-03	7.438-03	6.478-03	5.788-03	5.301-03	4.974-03	4.746-03
31	35	1.311-02	1.134-02	9.681-03	8.234-03	7.005-03	5.940-03	4.983-03	4.101-03	3.288-03	2.556-03	1.924-03
31	36	2.642-02	2.116-02	1.694-02	1.368-02	1.117-02	9.149-03	7.455-03	5.983-03	4.699-03	3.603-03	2.700-03
31	37	8.766-02	9.624-02	1.047-01	1.125-01	1.199-01	1.272-01	1.349-01	1.427-01	1.497-01	1.549-01	1.565-01
31	38	4.701-02	4.222-02	3.865-02	3.609-02	3.430-02	3.309-02	3.235-02	3.205-02	3.220-02	3.277-02	3.347-02
31	39	1.065-01	1.164-01	1.257-01	1.339-01	1.418-01	1.499-01	1.589-01	1.686-01	1.781-01	1.860-01	1.896-01
31	40	5.995-01	6.553-01	7.060-01	7.524-01	7.979-01	8.464-01	9.007-01	9.601-01	1.019-00	1.069-00	1.094-00
31	41	2.536-02	2.380-02	2.252-02	2.134-02	2.014-02	1.889-02	1.761-02	1.636-02	1.524-02	1.432-02	1.358-02
31	42	7.842-01	8.219-01	8.573-01	8.913-01	9.273-01	9.698-01	1.022-00	1.084-00	1.149-00	1.208-00	1.242-00
31	43	1.205-00	1.258-00	1.309-00	1.359-00	1.414-00	1.480-00	1.561-00	1.658-00	1.762-00	1.858-00	1.917-00
31	44	5.535-01	5.779-01	5.999-01	6.202-01	6.415-01	6.676-01	7.011-01	7.423-01	7.878-01	8.305-01	8.570-01
31	45	1.499-02	1.478-02	1.446-02	1.401-02	1.344-02	1.277-02	1.206-02	1.137-02	1.075-02	1.021-02	9.682-03
31	46	1.505-02	1.469-02	1.417-02	1.344-02	1.246-02	1.124-02	9.819-03	8.286-03	6.757-03	5.342-03	4.120-03
32	33	4.940-01	4.688-01	4.143-01	3.482-01	2.860-01	2.345-01	1.946-01	1.642-01	1.411-01	1.235-01	1.095-01
32	34	4.073-02	3.997-02	3.996-02	4.042-02	4.119-02	4.220-02	4.336-02	4.452-02	4.541-02	4.574-02	4.519-02
32	35	2.521-02	2.342-02	2.179-02	2.035-02	1.908-02	1.792-02	1.683-02	1.579-02	1.481-02	1.389-02	1.301-02
32	36	5.840-02	5.475-02	5.237-02	5.097-02	5.031-02	5.023-02	5.058-02	5.119-02	5.176-02	5.193-02	5.132-02
32	37	9.181-02	9.481-02	9.862-02	1.027-01	1.069-01	1.115-01	1.165-01	1.218-01	1.265-01	1.297-01	1.300-01
32	38	8.387-02	7.062-02	6.068-02	5.338-02	4.794-02	4.376-02	4.046-02	3.789-02	3.601-02	3.481-02	3.403-02
32	39	1.541-02	1.302-02	1.126-02	9.966-03	8.979-03	8.191-03	7.542-03	7.006-03	6.579-03	6.261-03	6.011-03
32	40	1.557-01	1.639-01	1.715-01	1.783-01	1.849-01	1.921-01	2.003-01	2.095-01	2.188-01	2.262-01	2.290-01
32	41	3.088-00	3.281-00	3.470-00	3.661-00	3.866-00	4.101-00	4.370-00	4.669-00	4.968-00	5.222-00	5.361-00
32	42	1.416-00	1.484-00	1.548-00	1.610-00	1.676-00	1.754-00	1.851-00	1.964-00	2.085-00	2.194-00	2.257-00
32	43	4.271-01	4.470-01	4.640-01	4.787-01	4.935-01	5.115-01	5.351-01	5.644-01	5.968-01	6.268-01	6.446-01
32	44	3.614-03	3.437-03	3.248-03	3.031-03	2.775-03	2.474-03	2.135-03	1.776-03	1.422-03	1.097-03	8.167-04
32	45	1.197-02	1.174-02	1.139-02	1.091-02	1.028-02	9.513-03	8.645-03	7.744-03	6.883-03	6.121-03	5.461-03
32	46	2.389-01	2.409-01	2.438-01	2.481-01	2.543-01	2.630-01	2.747-01	2.894-01	3.057-01	3.214-01	3.320-01
33	34	8.387-02	9.180-02	1.008-01	1.104-01	1.203-01	1.300-01	1.389-01	1.458-01	1.500-01	1.512-01	1.487-01
33	35	1.973-01	1.970-01	1.939-01	1.895-01	1.851-01	1.812-01	1.783-01	1.764-01	1.753-01	1.749-01	1.737-01
33	36	4.757-02	4.074-02	3.436-02	2.894-02	2.451-02	2.087-02	1.779-02	1.510-02	1.274-02	1.067-02	8.903-03
33	37	3.468-01	3.921-01	4.363-01	4.785-01	5.195-01	5.606-01	6.015-01	6.391-01	6.685-01	6.850-01	6.840-01
33	38	8.534-02	7.486-02	6.497-02	5.627-02	4.866-02	4.177-02	3.530-02	2.920-02	2.357-02	1.859-02	1.440-02
33	39	1.682-02	1.373-02	1.103-02	8.841-03	7.124-03	5.772-03	4.684-03	3.786-03	3.040-03	2.424-03	1.920-03
33	40	2.576-01	2.718-01	2.850-01	2.979-01	3.116-01	3.273-01	3.453-01	3.645-01	3.820-01	3.945-01	3.979-01
33	41	1.743-01	1.744-01	1.751-01	1.770-01	1.802-01	1.849-01	1.911-01	1.981-01	2.049-01	2.098-01	2.105-01
33	42	3.104-01	3.165-01	3.230-01	3.301-01	3.387-01	3.501-01	3.648-01	3.822-01	3.998-01	4.140-01	4.195-01

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
33	43	5.218-02	4.881-02	4.619-02	4.419-02	4.273-02	4.176-02	4.128-02	4.119-02	4.132-02	4.137-02	4.086-02
33	44	9.114-03	7.482-03	6.210-03	5.222-03	4.422-03	3.732-03	3.104-03	2.519-03	1.983-03	1.509-03	1.112-03
33	45	6.972-02	6.993-02	7.021-02	7.070-02	7.167-02	7.341-02	7.614-02	7.988-02	8.437-02	8.895-02	9.223-02
33	46	4.866-00	4.925-00	5.012-00	5.139-00	5.320-00	5.565-00	5.881-00	6.259-00	6.661-00	7.023-00	7.246-00
34	35	7.657-03	6.457-03	5.182-03	4.037-03	3.106-03	2.379-03	1.816-03	1.375-03	1.027-03	7.530-04	5.400-04
34	36	2.763-01	2.720-01	2.660-01	2.575-01	2.461-01	2.317-01	2.146-01	1.960-01	1.770-01	1.590-01	1.424-01
34	37	9.645-02	9.402-02	9.104-02	8.738-02	8.291-02	7.762-02	7.173-02	6.562-02	5.980-02	5.468-02	5.028-02
34	38	5.292-03	4.233-03	3.394-03	2.765-03	2.304-03	1.962-03	1.705-03	1.507-03	1.354-03	1.237-03	1.144-03
34	39	1.037-01	1.035-01	1.025-01	1.003-01	9.699-02	9.256-02	8.730-02	8.154-02	7.566-02	7.000-02	6.457-02
34	40	3.642-02	3.485-02	3.325-02	3.153-02	2.961-02	2.742-02	2.497-02	2.237-02	1.975-02	1.730-02	1.509-02
34	41	2.491-02	2.404-02	2.312-02	2.210-02	2.092-02	1.952-02	1.789-02	1.608-02	1.415-02	1.222-02	1.036-02
34	42	2.057-02	2.016-02	1.969-02	1.913-02	1.843-02	1.753-02	1.641-02	1.509-02	1.362-02	1.209-02	1.060-02
34	43	3.139-02	3.121-02	3.094-02	3.056-02	3.004-02	2.935-02	2.850-02	2.751-02	2.645-02	2.541-02	2.436-02
34	44	1.673-02	1.674-02	1.672-02	1.667-02	1.657-02	1.645-02	1.630-02	1.616-02	1.603-02	1.594-02	1.580-02
34	45	2.232-02	2.216-02	2.191-02	2.156-02	2.109-02	2.052-02	1.987-02	1.919-02	1.852-02	1.789-02	1.725-02
34	46	3.286-02	3.236-02	3.163-02	3.059-02	2.919-02	2.740-02	2.527-02	2.286-02	2.029-02	1.771-02	1.523-02
35	36	9.171-03	7.769-03	6.465-03	5.354-03	4.437-03	3.669-03	3.004-03	2.416-03	1.895-03	1.447-03	1.075-03
35	37	2.166-02	1.830-02	1.426-02	1.058-02	7.645-03	5.458-03	3.878-03	2.746-03	1.935-03	1.353-03	9.363-04
35	38	1.770-02	1.516-02	1.292-02	1.103-02	9.429-03	8.016-03	6.708-03	5.478-03	4.335-03	3.317-03	2.453-03
35	39	3.484-03	3.290-03	3.179-03	3.148-03	3.179-03	3.243-03	3.305-03	3.338-03	3.325-03	3.263-03	3.144-03
35	40	2.118-02	1.678-02	1.277-02	9.548-03	7.121-03	5.326-03	3.989-03	2.974-03	2.193-03	1.591-03	1.133-03
35	41	5.980-03	5.096-03	4.339-03	3.705-03	3.157-03	2.660-03	2.195-03	1.763-03	1.372-03	1.037-03	7.630-04
35	42	1.197-02	1.021-02	8.749-03	7.546-03	6.511-03	5.566-03	4.668-03	3.809-03	3.010-03	2.300-03	1.699-03
35	43	9.900-03	9.252-03	8.730-03	8.291-03	7.896-03	7.514-03	7.129-03	6.731-03	6.315-03	5.884-03	5.425-03
35	44	2.864-03	2.567-03	2.318-03	2.096-03	1.881-03	1.659-03	1.425-03	1.185-03	9.500-04	7.342-04	5.476-04
35	45	1.265-00	1.287-00	1.315-00	1.353-00	1.404-00	1.472-00	1.557-00	1.652-00	1.745-00	1.821-00	1.854-00
35	46	1.128-02	1.136-02	1.147-02	1.165-02	1.191-02	1.229-02	1.280-02	1.348-02	1.431-02	1.526-02	1.614-02
36	37	1.379-01	1.325-01	1.266-01	1.198-01	1.117-01	1.020-01	9.074-02	7.831-02	6.548-02	5.307-02	4.180-02
36	38	2.346-01	2.299-01	2.244-01	2.174-01	2.085-01	1.974-01	1.841-01	1.692-01	1.534-01	1.375-01	1.223-01
36	39	4.174-02	4.020-02	3.846-02	3.642-02	3.401-02	3.124-02	2.827-02	2.533-02	2.272-02	2.064-02	1.909-02
36	40	1.155-01	1.149-01	1.138-01	1.121-01	1.095-01	1.064-01	1.027-01	9.881-02	9.490-02	9.119-02	8.740-02
36	41	5.043-02	4.876-02	4.687-02	4.468-02	4.205-02	3.893-02	3.539-02	3.160-02	2.781-02	2.428-02	2.117-02
36	42	4.411-02	4.327-02	4.226-02	4.099-02	3.941-02	3.748-02	3.528-02	3.292-02	3.062-02	2.857-02	2.679-02
36	43	4.496-02	4.473-02	4.432-02	4.371-02	4.286-02	4.181-02	4.062-02	3.936-02	3.814-02	3.703-02	3.590-02
36	44	8.131-03	7.951-03	7.714-03	7.395-03	6.973-03	6.432-03	5.776-03	5.028-03	4.227-03	3.427-03	2.677-03
36	45	2.994-02	2.947-02	2.875-02	2.771-02	2.630-02	2.448-02	2.228-02	1.978-02	1.716-02	1.458-02	1.219-02
36	46	5.677-02	5.572-02	5.415-02	5.191-02	4.888-02	4.501-02	4.037-02	3.517-02	2.971-02	2.433-02	1.932-02
37	38	9.787-02	9.485-02	9.161-02	8.792-02	8.355-02	7.830-02	7.217-02	6.532-02	5.813-02	5.106-02	4.444-02
37	39	7.929-02	7.689-02	7.408-02	7.066-02	6.644-02	6.130-02	5.536-02	4.893-02	4.245-02	3.641-02	3.106-02
37	40	7.297-02	6.953-02	6.603-02	6.245-02	5.863-02	5.442-02	4.981-02	4.494-02	4.010-02	3.557-02	3.148-02
37	41	7.307-02	7.158-02	6.968-02	6.723-02	6.405-02	6.005-02	5.528-02	4.988-02	4.415-02	3.844-02	3.301-02

Table 4. Effective collision strengths for transitions in Ca XV. ($a \pm b \equiv a \times 10^{\pm b}$).

Transition		Temperature (log K)										
I	J	5.00	5.20	5.40	5.60	5.80	6.00	6.20	6.40	6.60	6.80	7.00
37	42	3.588-02	3.456-02	3.320-02	3.172-02	3.001-02	2.800-02	2.565-02	2.304-02	2.029-02	1.755-02	1.497-02
37	43	1.261-02	1.201-02	1.139-02	1.072-02	9.943-03	9.041-03	8.017-03	6.911-03	5.791-03	4.727-03	3.777-03
37	44	5.974-03	5.798-03	5.613-03	5.408-03	5.173-03	4.905-03	4.614-03	4.317-03	4.037-03	3.791-03	3.574-03
37	45	8.511-02	8.488-02	8.445-02	8.385-02	8.314-02	8.239-02	8.172-02	8.116-02	8.075-02	8.044-02	7.971-02
37	46	5.377-02	5.310-02	5.211-02	5.076-02	4.902-02	4.693-02	4.461-02	4.220-02	3.985-02	3.771-02	3.570-02
38	39	1.051-02	9.564-03	8.752-03	8.012-03	7.282-03	6.516-03	5.698-03	4.844-03	3.989-03	3.180-03	2.456-03
38	40	1.048-01	1.006-01	9.603-02	9.091-02	8.489-02	7.783-02	6.982-02	6.128-02	5.278-02	4.493-02	3.809-02
38	41	1.919-01	1.889-01	1.849-01	1.797-01	1.729-01	1.649-01	1.558-01	1.464-01	1.371-01	1.285-01	1.203-01
38	42	1.789-01	1.774-01	1.750-01	1.714-01	1.665-01	1.606-01	1.540-01	1.472-01	1.406-01	1.348-01	1.292-01
38	43	4.678-02	4.555-02	4.393-02	4.181-02	3.910-02	3.583-02	3.214-02	2.831-02	2.468-02	2.151-02	1.889-02
38	44	1.367-02	1.329-02	1.280-02	1.217-02	1.137-02	1.043-02	9.393-03	8.354-03	7.414-03	6.648-03	6.058-03
38	45	6.581-02	6.454-02	6.264-02	5.993-02	5.624-02	5.151-02	4.582-02	3.945-02	3.278-02	2.627-02	2.031-02
38	46	1.095-01	1.071-01	1.035-01	9.836-02	9.152-02	8.288-02	7.272-02	6.165-02	5.045-02	3.988-02	3.052-02
39	40	7.342-02	7.262-02	7.135-02	6.946-02	6.685-02	6.347-02	5.937-02	5.469-02	4.968-02	4.462-02	3.968-02
39	41	2.776-02	2.715-02	2.643-02	2.556-02	2.448-02	2.320-02	2.176-02	2.022-02	1.873-02	1.737-02	1.616-02
39	42	3.321-02	3.271-02	3.214-02	3.147-02	3.064-02	2.965-02	2.851-02	2.724-02	2.594-02	2.468-02	2.342-02
39	43	2.577-02	2.533-02	2.481-02	2.416-02	2.332-02	2.225-02	2.090-02	1.931-02	1.752-02	1.565-02	1.378-02
39	44	8.126-03	7.966-03	7.775-03	7.527-03	7.200-03	6.768-03	6.220-03	5.557-03	4.802-03	4.001-03	3.206-03
39	45	8.787-03	8.607-03	8.346-03	7.979-03	7.483-03	6.847-03	6.085-03	5.232-03	4.344-03	3.481-03	2.694-03
39	46	3.849-02	3.785-02	3.691-02	3.554-02	3.367-02	3.125-02	2.830-02	2.496-02	2.144-02	1.799-02	1.481-02
40	41	1.271-01	1.229-01	1.179-01	1.120-01	1.046-01	9.554-02	8.497-02	7.333-02	6.135-02	4.989-02	3.962-02
40	42	7.069-02	6.864-02	6.625-02	6.338-02	5.988-02	5.567-02	5.083-02	4.559-02	4.028-02	3.522-02	3.061-02
40	43	3.223-02	3.107-02	2.974-02	2.814-02	2.617-02	2.378-02	2.100-02	1.797-02	1.487-02	1.193-02	9.313-03
40	44	1.674-02	1.644-02	1.610-02	1.568-02	1.518-02	1.459-02	1.396-02	1.331-02	1.271-02	1.220-02	1.174-02
40	45	8.091-02	8.035-02	7.947-02	7.821-02	7.661-02	7.470-02	7.262-02	7.047-02	6.836-02	6.636-02	6.419-02
40	46	8.435-02	8.301-02	8.104-02	7.828-02	7.463-02	7.011-02	6.487-02	5.920-02	5.349-02	4.807-02	4.309-02
41	42	1.806-01	1.788-01	1.762-01	1.722-01	1.670-01	1.606-01	1.532-01	1.454-01	1.376-01	1.301-01	1.227-01
41	43	1.150-01	1.146-01	1.138-01	1.124-01	1.105-01	1.083-01	1.060-01	1.038-01	1.019-01	1.004-01	9.863-02
41	44	1.701-02	1.653-02	1.593-02	1.513-02	1.411-02	1.283-02	1.132-02	9.661-03	7.953-03	6.312-03	4.833-03
41	45	3.939-02	3.855-02	3.729-02	3.552-02	3.311-02	3.005-02	2.640-02	2.237-02	1.825-02	1.433-02	1.085-02
41	46	1.320-01	1.294-01	1.255-01	1.200-01	1.125-01	1.030-01	9.169-02	7.908-02	6.608-02	5.359-02	4.234-02
42	43	1.284-01	1.264-01	1.238-01	1.201-01	1.154-01	1.094-01	1.023-01	9.460-02	8.657-02	7.872-02	7.120-02
42	44	8.152-02	8.168-02	8.163-02	8.134-02	8.087-02	8.036-02	7.996-02	7.980-02	7.990-02	8.018-02	8.007-02
42	45	5.165-02	5.073-02	4.935-02	4.740-02	4.478-02	4.146-02	3.755-02	3.328-02	2.896-02	2.489-02	2.125-02
42	46	9.572-02	9.392-02	9.125-02	8.744-02	8.229-02	7.570-02	6.781-02	5.902-02	4.992-02	4.112-02	3.311-02
43	44	3.721-02	3.640-02	3.533-02	3.388-02	3.197-02	2.953-02	2.659-02	2.324-02	1.966-02	1.607-02	1.268-02
43	45	2.926-02	2.859-02	2.761-02	2.621-02	2.434-02	2.198-02	1.920-02	1.617-02	1.311-02	1.025-02	7.742-03
43	46	5.040-02	4.938-02	4.787-02	4.572-02	4.280-02	3.907-02	3.461-02	2.963-02	2.448-02	1.950-02	1.499-02
44	45	1.081-02	1.056-02	1.019-02	9.668-03	8.965-03	8.081-03	7.042-03	5.914-03	4.777-03	3.715-03	2.787-03
44	46	1.536-02	1.504-02	1.457-02	1.390-02	1.300-02	1.185-02	1.048-02	8.968-03	7.403-03	5.893-03	4.526-03
45	46	7.340-02	7.299-02	7.241-02	7.170-02	7.094-02	7.032-02	7.005-02	7.036-02	7.139-02	7.310-02	7.483-02