

**Table 5.3.13a.** The 45 fine-structure  $n = 2$  and  $n = 3$  levels included in the calculation (97Z1) and their calculated and observed energies in rydbergs (85S1) for Fe XXII. The index  $i$  is used in Table 5.3.13b for transition keys.

$i$	Level	Observed	Theory	$i$	Level	Observed	Theory
1	$2s^2 2p \ ^2P_{1/2}^o$	0.00000	0.00000	24	$2s2p(^3P)3s \ ^2P_{1/2}^o$		78.37193
2	$2s^2 2p \ ^2P_{3/2}^o$	1.07776	1.05629	25	$2s2p(^3P)3p \ ^4D_{1/2}$		78.83664
3	$2s \ 2p^2 \ ^4P_{1/2}$	3.68653	3.63439	26	$2s2p(^3P)3p \ ^4D_{3/2}$		79.07484
4	$2s \ 2p^2 \ ^4P_{3/2}$	4.19365	4.13075	27	$2s2p(^3P)3s \ ^2P_{3/2}^o$		79.11491
5	$2s \ 2p^2 \ ^4P_{5/2}$	4.67717	4.64059	28	$2s2p(^3P)3p \ ^4D_{5/2}$		79.52481
6	$2s \ 2p^2 \ ^2D_{3/2}$	6.71166	6.73858	29	$2s2p(^3P)3p \ ^2P_{1/2}$	78.22317	79.52855
7	$2s \ 2p^2 \ ^2D_{5/2}$	6.92217	6.94497	30	$2s2p(^3P)3p \ ^2P_{3/2}$	79.17089	79.41152
8	$2s \ 2p^2 \ ^2P_{1/2}$	7.77748	7.82265	31	$2s2p(^3P)3p \ ^4P_{1/2}$		79.79154
9	$2s \ 2p^2 \ ^2S_{1/2}$	8.91420	8.93489	32	$2s2p(^3P)3p \ ^2D_{3/2}$	79.64474	79.90941
10	$2s \ 2p^2 \ ^2P_{3/2}$	9.04241	9.09880	33	$2s2p(^3P)3p \ ^4D_{7/2}$		80.16203
11	$2p^3 \ ^4S_{3/2}^o$	11.44278	11.43474	34	$2s2p(^3P)3p \ ^4P_{3/2}$		80.27484
12	$2p^3 \ ^2D_{3/2}^o$	12.72512	12.77092	35	$2s2p(^3P)3p \ ^4S_{3/2}$		80.39784
13	$2p^3 \ ^2D_{5/2}^o$	13.00269	13.07500	36	$2s2p(^3P)3p \ ^4P_{5/2}$		80.44491
14	$2p^3 \ ^2P_{1/2}^o$	14.30352	14.37056	37	$2s2p(^3P)3p \ ^2D_{5/2}$	80.60158	80.87084
15	$2p^3 \ ^2P_{3/2}^o$	14.83288	14.88660	38	$2s2p(^3P)3p \ ^2S_{1/2}$		81.14805
16	$2s^2 3s \ ^2S_{1/2}$		74.08994	39	$2s2p(^1P)3s \ ^2P_{1/2}^o$		81.18313
17	$2s^2 3p \ ^2P_{1/2}^o$		75.74732	40	$2s2p(^1P)3s \ ^2P_{3/2}^o$		81.21893
18	$2s^2 3p \ ^2P_{3/2}^o$		76.01977	41	$2s2p(^1P)3p \ ^2P_{1/2}$		82.82656
19	$2s2p(^3P)3s \ ^4P_{1/2}^o$		77.41721	42	$2s2p(^1P)3p \ ^2D_{3/2}$		82.83533
20	$2s^2 3d \ ^2D_{3/2}$	77.43948	77.57156	43	$2s2p(^1P)3p \ ^2D_{5/2}$		83.03150
21	$2s^2 3d \ ^2D_{5/2}$	77.52149	77.65898	44	$2s2p(^1P)3p \ ^2P_{3/2}$		83.11559
22	$2s2p(^3P)3s \ ^4P_{3/2}^o$		77.69215	45	$2s2p(^1P)3p \ ^2S_{1/2}$		83.47909
23	$2s2p(^3P)3s \ ^4P_{5/2}^o$		78.31381				

**Table 5.3.13b.** The effective collision strengths  $\Upsilon(i, j)$  as a function of temperature  $T$ (K) for the transitions between the 15  $n = 2$  levels and the transitions between the five  $n = 2$  levels and the 30  $n = 3$  levels,  $i = 16-45$  as specified in Table 5.3.13a for Fe xxii (97Z1). The temperatures are in  $z^2$ K, where  $z = 21$  is the ion charge.

Levels		$T(z^2\text{K})$							
$i$	$j$	100	500	1000	2500	5000	10000	20000	50000
1	2	1.35[-1]	1.47[-1]	1.51[-1]	1.17[-1]	8.89[-2]	6.94[-2]	5.38[-2]	3.62[-2]
1	3	1.46[-2]	1.37[-2]	1.23[-2]	1.13[-2]	1.18[-2]	1.24[-2]	1.27[-2]	1.25[-2]
2	3	9.10[-3]	9.58[-3]	8.11[-3]	6.69[-3]	6.74[-3]	7.09[-3]	7.17[-3]	6.86[-3]
1	4	1.63[-2]	1.59[-2]	1.31[-2]	9.82[-3]	9.00[-3]	8.47[-3]	7.14[-3]	4.74[-3]
2	4	1.92[-2]	2.30[-2]	1.94[-2]	1.48[-2]	1.37[-2]	1.30[-2]	1.16[-2]	8.98[-3]
3	4	1.06[-1]	7.19[-2]	6.31[-2]	5.13[-2]	4.62[-2]	4.01[-2]	3.18[-2]	2.08[-2]
1	5	1.45[-2]	1.57[-2]	1.29[-2]	9.28[-3]	7.99[-3]	7.01[-3]	5.62[-3]	3.59[-3]
2	5	4.39[-2]	4.68[-2]	4.05[-2]	3.46[-2]	3.46[-2]	3.59[-2]	3.62[-2]	3.48[-2]
3	5	9.29[-2]	6.10[-2]	5.31[-2]	4.15[-2]	3.53[-2]	3.03[-2]	2.54[-2]	1.96[-2]
4	5	2.00[-1]	1.40[-1]	1.24[-1]	9.82[-2]	8.34[-2]	7.08[-2]	5.77[-2]	4.16[-2]
1	6	2.02[-1]	1.90[-1]	1.97[-1]	2.22[-1]	2.52[-1]	2.85[-1]	3.22[-1]	3.65[-1]
2	6	2.45[-2]	2.37[-2]	1.87[-2]	1.41[-2]	1.32[-2]	1.27[-2]	1.12[-2]	8.35[-3]
3	6	2.15[-2]	1.92[-2]	1.74[-2]	1.61[-2]	1.69[-2]	1.61[-2]	1.32[-2]	8.49[-3]
4	6	3.91[-2]	3.89[-2]	3.28[-2]	2.81[-2]	2.91[-2]	2.76[-2]	2.21[-2]	1.35[-2]
5	6	3.36[-2]	3.43[-2]	2.94[-2]	2.49[-2]	2.56[-2]	2.44[-2]	1.96[-2]	1.22[-2]
1	7	1.42[-2]	1.42[-2]	1.09[-2]	7.48[-3]	6.31[-3]	5.45[-3]	4.34[-3]	2.76[-3]
2	7	2.33[-1]	2.37[-1]	2.49[-1]	2.90[-1]	3.35[-1]	3.80[-1]	4.26[-1]	4.80[-1]
3	7	8.65[-3]	8.49[-3]	7.41[-3]	7.24[-3]	8.94[-3]	9.20[-3]	7.51[-3]	4.62[-3]
4	7	4.16[-2]	4.44[-2]	3.78[-2]	3.19[-2]	3.14[-2]	2.90[-2]	2.37[-2]	1.57[-2]
5	7	7.38[-2]	7.80[-2]	7.01[-2]	6.13[-2]	5.94[-2]	5.56[-2]	4.72[-2]	3.32[-2]
6	7	1.77[-1]	2.33[-1]	1.77[-1]	1.10[-1]	7.85[-2]	5.73[-2]	4.14[-2]	2.68[-2]
1	8	2.60[-1]	2.46[-1]	2.44[-1]	2.65[-1]	2.92[-1]	3.24[-1]	3.62[-1]	4.06[-1]
2	8	2.60[-3]	2.67[-3]	2.57[-3]	2.94[-3]	3.82[-3]	4.09[-3]	3.49[-3]	2.26[-3]
3	8	5.28[-3]	6.34[-3]	5.71[-3]	5.50[-3]	6.43[-3]	6.27[-3]	4.95[-3]	2.97[-3]
4	8	8.09[-3]	1.07[-2]	9.40[-3]	8.97[-3]	1.09[-2]	1.07[-2]	8.16[-3]	4.56[-3]
5	8	9.33[-3]	1.14[-2]	1.03[-2]	9.29[-3]	9.91[-3]	9.34[-3]	7.35[-3]	4.40[-3]
6	8	3.45[-2]	4.71[-2]	4.22[-2]	3.30[-2]	2.88[-2]	2.51[-2]	2.09[-2]	1.62[-2]
7	8	3.05[-2]	4.26[-2]	3.88[-2]	3.10[-2]	2.75[-2]	2.44[-2]	2.09[-2]	1.68[-2]
1	9	1.18[-2]	1.12[-2]	1.10[-2]	1.19[-2]	1.33[-2]	1.48[-2]	1.64[-2]	1.82[-2]
2	9	2.36[-1]	2.20[-1]	2.16[-1]	2.35[-1]	2.60[-1]	2.89[-1]	3.22[-1]	3.60[-1]
3	9	1.51[-3]	1.88[-3]	1.63[-3]	1.86[-3]	2.78[-3]	2.93[-3]	2.27[-3]	1.25[-3]
4	9	5.69[-3]	6.50[-3]	5.83[-3]	5.74[-3]	6.80[-3]	6.68[-3]	5.31[-3]	3.22[-3]
5	9	1.00[-2]	1.06[-2]	9.81[-3]	9.20[-3]	9.55[-3]	9.00[-3]	7.39[-3]	4.91[-3]
6	9	4.48[-2]	5.90[-2]	5.23[-2]	3.76[-2]	2.91[-2]	2.28[-2]	1.77[-2]	1.30[-2]
7	9	3.64[-2]	4.21[-2]	3.88[-2]	3.31[-2]	3.09[-2]	2.87[-2]	2.58[-2]	2.19[-2]
8	9	2.93[-2]	3.97[-2]	3.48[-2]	2.56[-2]	2.16[-2]	1.77[-2]	1.29[-2]	7.23[-3]
1	10	5.58[-2]	5.28[-2]	5.20[-2]	5.51[-2]	5.99[-2]	6.56[-2]	7.21[-2]	8.00[-2]
2	10	5.80[-1]	5.39[-1]	5.30[-1]	5.69[-1]	6.23[-1]	6.88[-1]	7.65[-1]	8.56[-1]
3	10	2.48[-3]	3.84[-3]	3.24[-3]	2.69[-3]	3.07[-3]	2.99[-3]	2.31[-3]	1.31[-3]
4	10	8.42[-3]	1.23[-2]	1.07[-2]	8.76[-3]	9.04[-3]	8.47[-3]	6.59[-3]	3.84[-3]
5	10	1.53[-2]	2.17[-2]	1.90[-2]	1.48[-2]	1.40[-2]	1.26[-2]	9.82[-3]	5.99[-3]
6	10	6.48[-2]	9.34[-2]	8.29[-2]	6.00[-2]	4.78[-2]	3.81[-2]	2.87[-2]	1.82[-2]
7	10	9.03[-2]	1.28[-1]	1.11[-1]	7.72[-2]	5.89[-2]	4.50[-2]	3.24[-2]	1.87[-2]
8	10	4.80[-2]	6.01[-2]	5.20[-2]	3.94[-2]	3.54[-2]	3.10[-2]	2.43[-2]	1.58[-2]
9	10	6.62[-2]	8.27[-2]	6.98[-2]	5.01[-2]	4.19[-2]	3.52[-2]	2.77[-2]	1.91[-2]
1	11	3.98[-4]	3.59[-4]	3.34[-4]	3.61[-4]	4.38[-4]	4.41[-4]	3.71[-4]	2.57[-4]
2	11	6.36[-4]	5.86[-4]	5.41[-4]	6.56[-4]	8.92[-4]	9.22[-4]	7.50[-4]	4.76[-4]
3	11	1.28[-1]	1.24[-1]	1.31[-1]	1.47[-1]	1.61[-1]	1.76[-1]	1.93[-1]	2.15[-1]
4	11	2.32[-1]	2.25[-1]	2.40[-1]	2.71[-1]	2.98[-1]	3.27[-1]	3.62[-1]	4.03[-1]
5	11	2.72[-1]	2.50[-1]	2.85[-1]	4.20[-1]	4.80[-1]	5.42[-1]	6.02[-1]	6.68[-1]

**Table 5.3.13b.** (continued)

Levels		$T(z^2\text{K})$							
$i$	$j$	100	500	1000	2500	5000	10000	20000	50000
6	11	1.46[-2]	1.23[-2]	1.14[-2]	1.19[-2]	1.34[-2]	1.42[-2]	1.44[-2]	1.46[-2]
7	11	1.00[-2]	7.86[-3]	5.64[-3]	4.11[-3]	4.25[-3]	4.05[-3]	3.38[-3]	2.55[-3]
8	11	2.45[-2]	2.12[-2]	2.08[-2]	2.31[-2]	2.65[-2]	2.84[-2]	2.92[-2]	2.99[-2]
9	11	1.15[-2]	8.88[-3]	8.24[-3]	8.96[-3]	1.06[-2]	1.13[-2]	1.12[-2]	1.09[-2]
10	11	3.84[-2]	3.22[-2]	2.99[-2]	3.05[-2]	3.36[-2]	3.51[-2]	3.51[-2]	3.45[-2]
1	12	1.05[-3]	9.92[-4]	9.89[-4]	1.07[-3]	1.19[-3]	1.20[-3]	1.12[-3]	9.76[-4]
2	12	8.83[-4]	8.42[-4]	8.13[-4]	9.58[-4]	1.19[-3]	1.20[-3]	1.04[-3]	7.79[-4]
3	12	4.19[-3]	4.12[-3]	4.08[-3]	4.86[-3]	5.82[-3]	5.65[-3]	4.60[-3]	3.03[-3]
4	12	2.65[-2]	2.59[-2]	2.66[-2]	2.88[-2]	3.14[-2]	3.32[-2]	3.44[-2]	3.55[-2]
5	12	2.78[-3]	2.66[-3]	2.70[-3]	3.84[-3]	5.50[-3]	5.99[-3]	5.50[-3]	4.69[-3]
6	12	2.30[-1]	2.19[-1]	2.33[-1]	2.58[-1]	2.81[-1]	3.06[-1]	3.37[-1]	3.73[-1]
7	12	1.70[-1]	1.63[-1]	1.73[-1]	1.94[-1]	2.13[-1]	2.33[-1]	2.55[-1]	2.79[-1]
8	12	3.44[-1]	3.23[-1]	3.51[-1]	3.95[-1]	4.31[-1]	4.70[-1]	5.20[-1]	5.81[-1]
9	12	1.00[-1]	9.48[-2]	1.04[-1]	1.20[-1]	1.32[-1]	1.46[-1]	1.62[-1]	1.82[-1]
10	12	1.74[-2]	1.48[-2]	1.34[-2]	1.43[-2]	1.72[-2]	1.79[-2]	1.68[-2]	1.51[-2]
11	12	3.48[-2]	3.41[-2]	3.35[-2]	3.79[-2]	4.51[-2]	4.39[-2]	3.59[-2]	2.37[-2]
1	13	6.20[-4]	5.85[-4]	5.70[-4]	6.31[-4]	7.38[-4]	7.47[-4]	6.65[-4]	5.32[-4]
2	13	2.00[-3]	1.89[-3]	1.85[-3]	1.96[-3]	2.13[-3]	2.14[-3]	2.01[-3]	1.77[-3]
3	13	4.49[-4]	4.30[-4]	4.17[-4]	7.66[-4]	1.30[-3]	1.38[-3]	1.07[-3]	5.96[-4]
4	13	4.38[-3]	4.24[-3]	4.15[-3]	4.86[-3]	6.15[-3]	6.29[-3]	5.33[-3]	3.77[-3]
5	13	4.15[-2]	4.05[-2]	4.14[-2]	4.44[-2]	4.84[-2]	5.10[-2]	5.24[-2]	5.31[-2]
6	13	1.44[-1]	1.37[-1]	1.42[-1]	1.53[-1]	1.65[-1]	1.78[-1]	1.94[-1]	2.14[-1]
7	13	5.48[-1]	5.23[-1]	5.56[-1]	6.16[-1]	6.71[-1]	7.32[-1]	8.06[-1]	8.94[-1]
8	13	3.48[-3]	2.93[-3]	2.22[-3]	2.30[-3]	3.23[-3]	3.25[-3]	2.45[-3]	1.34[-3]
9	13	5.93[-3]	4.90[-3]	3.45[-3]	2.34[-3]	2.34[-3]	2.06[-3]	1.47[-3]	7.72[-4]
10	13	5.26[-1]	5.05[-1]	5.54[-1]	6.29[-1]	6.89[-1]	7.57[-1]	8.40[-1]	9.40[-1]
11	13	4.26[-2]	4.18[-2]	4.08[-2]	4.13[-2]	4.39[-2]	4.20[-2]	3.57[-2]	2.54[-2]
12	13	5.62[-2]	5.46[-2]	5.30[-2]	5.70[-2]	6.76[-2]	6.77[-2]	5.68[-2]	3.90[-2]
1	14	7.72[-4]	7.69[-4]	7.71[-4]	8.46[-4]	9.36[-4]	9.36[-4]	8.56[-4]	7.04[-4]
2	14	5.30[-4]	5.22[-4]	5.23[-4]	6.09[-4]	7.07[-4]	7.05[-4]	6.25[-4]	5.02[-4]
3	14	1.13[-3]	1.13[-3]	1.14[-3]	1.41[-3]	1.70[-3]	1.70[-3]	1.52[-3]	1.27[-3]
4	14	2.02[-3]	2.00[-3]	2.01[-3]	2.51[-3]	3.06[-3]	2.97[-3]	2.43[-3]	1.66[-3]
5	14	1.73[-3]	1.71[-3]	1.71[-3]	2.34[-3]	3.05[-3]	2.95[-3]	2.30[-3]	1.37[-3]
6	14	2.08[-1]	2.11[-1]	2.16[-1]	2.30[-1]	2.47[-1]	2.70[-1]	2.98[-1]	3.32[-1]
7	14	1.51[-3]	1.50[-3]	1.50[-3]	2.09[-3]	2.82[-3]	2.80[-3]	2.18[-3]	1.29[-3]
8	14	3.06[-2]	3.13[-2]	3.20[-2]	3.43[-2]	3.69[-2]	3.95[-2]	4.23[-2]	4.57[-2]
9	14	2.62[-1]	2.66[-1]	2.73[-1]	2.89[-1]	3.09[-1]	3.35[-1]	3.68[-1]	4.08[-1]
10	14	5.35[-2]	5.47[-2]	5.63[-2]	6.19[-2]	6.84[-2]	7.42[-2]	8.04[-2]	8.75[-2]
11	14	8.96[-3]	8.81[-3]	8.70[-3]	1.08[-2]	1.39[-2]	1.35[-2]	1.05[-2]	6.21[-3]
12	14	2.06[-2]	2.06[-2]	2.06[-2]	2.42[-2]	2.94[-2]	3.02[-2]	2.75[-2]	2.31[-2]
13	14	2.12[-2]	2.11[-2]	2.10[-2]	2.32[-2]	2.69[-2]	2.72[-2]	2.45[-2]	2.02[-2]
1	15	1.12[-4]	1.10[-4]	1.13[-4]	1.89[-4]	2.80[-4]	2.86[-4]	2.28[-4]	1.46[-4]
2	15	2.27[-3]	2.26[-3]	2.26[-3]	2.40[-3]	2.58[-3]	2.56[-3]	2.37[-3]	2.01[-3]
3	15	1.19[-4]	1.18[-4]	1.32[-4]	4.58[-4]	8.44[-4]	8.78[-4]	6.61[-4]	3.65[-4]
4	15	2.29[-3]	2.29[-3]	2.35[-3]	3.37[-3]	4.55[-3]	4.71[-3]	4.15[-3]	3.36[-3]
5	15	5.62[-3]	5.59[-3]	5.57[-3]	6.54[-3]	7.73[-3]	7.58[-3]	6.41[-3]	4.66[-3]
6	15	5.98[-2]	6.11[-2]	6.23[-2]	6.63[-2]	7.16[-2]	7.73[-2]	8.41[-2]	9.23[-2]
7	15	1.84[-1]	1.89[-1]	1.94[-1]	2.06[-1]	2.22[-1]	2.41[-1]	2.64[-1]	2.90[-1]
8	15	7.35[-2]	7.51[-2]	7.67[-2]	8.11[-2]	8.66[-2]	9.28[-2]	1.01[-1]	1.11[-1]
9	15	6.19[-2]	6.29[-2]	6.39[-2]	6.71[-2]	7.12[-2]	7.59[-2]	8.16[-2]	8.85[-2]
10	15	6.95[-1]	7.07[-1]	7.24[-1]	7.66[-1]	8.19[-1]	8.87[-1]	9.76[-1]	1.09

**Table 5.3.13b.** (continued)

Levels		$T(z^2\text{K})$							
$i$	$j$	100	500	1000	2500	5000	10000	20000	50000
11	15	1.23[-2]	1.21[-2]	1.19[-2]	1.50[-2]	1.95[-2]	1.92[-2]	1.49[-2]	8.60[-3]
12	15	2.41[-2]	2.39[-2]	2.38[-2]	3.08[-2]	4.13[-2]	4.20[-2]	3.49[-2]	2.42[-2]
13	15	5.47[-2]	5.44[-2]	5.42[-2]	6.09[-2]	7.19[-2]	7.34[-2]	6.67[-2]	5.56[-2]
14	15	2.05[-2]	2.02[-2]	2.00[-2]	2.26[-2]	2.67[-2]	2.62[-2]	2.20[-2]	1.54[-2]
1	16	3.13[-2]	2.35[-2]	1.72[-2]	9.65[-3]	5.92[-3]	3.74[-3]	2.63[-3]	2.14[-3]
2	16	8.22[-2]	5.91[-2]	4.27[-2]	2.37[-2]	1.43[-2]	8.81[-3]	6.07[-3]	4.85[-3]
3	16	5.76[-3]	2.94[-3]	1.90[-3]	9.47[-4]	5.18[-4]	2.72[-4]	1.40[-4]	5.74[-5]
4	16	1.13[-2]	6.01[-3]	3.82[-3]	1.86[-3]	1.00[-3]	5.23[-4]	2.68[-4]	1.09[-4]
5	16	6.70[-3]	4.35[-3]	3.02[-3]	1.58[-3]	8.76[-4]	4.65[-4]	2.42[-4]	1.02[-4]
1	17	2.68[-2]	2.88[-2]	2.40[-2]	1.70[-2]	1.36[-2]	1.16[-2]	1.05[-2]	9.30[-3]
2	17	2.78[-2]	2.78[-2]	2.16[-2]	1.33[-2]	9.24[-3]	6.73[-3]	5.19[-3]	3.78[-3]
3	17	2.90[-3]	4.06[-3]	3.15[-3]	1.71[-3]	9.58[-4]	5.13[-4]	2.70[-4]	1.15[-4]
4	17	6.12[-3]	7.20[-3]	5.54[-3]	3.00[-3]	1.68[-3]	8.99[-4]	4.72[-4]	2.04[-4]
5	17	4.12[-3]	6.59[-3]	5.22[-3]	2.84[-3]	1.59[-3]	8.42[-4]	4.36[-4]	1.80[-4]
1	18	2.66[-2]	2.63[-2]	2.04[-2]	1.27[-2]	8.90[-3]	6.53[-3]	5.02[-3]	3.59[-3]
2	18	1.36[-1]	1.16[-1]	8.76[-2]	5.62[-2]	4.19[-2]	3.37[-2]	2.92[-2]	2.51[-2]
3	18	4.79[-3]	4.41[-3]	3.26[-3]	1.75[-3]	9.80[-4]	5.24[-4]	2.76[-4]	1.24[-4]
4	18	1.38[-2]	1.22[-2]	8.68[-3]	4.57[-3]	2.54[-3]	1.35[-3]	7.04[-4]	2.93[-4]
5	18	2.25[-2]	1.87[-2]	1.32[-2]	6.78[-3]	3.75[-3]	2.00[-3]	1.07[-3]	5.03[-4]
1	19	1.67[-2]	8.77[-3]	5.75[-3]	3.23[-3]	2.21[-3]	1.62[-3]	1.25[-3]	9.09[-4]
2	19	7.02[-3]	3.40[-3]	2.09[-3]	9.94[-4]	5.55[-4]	3.14[-4]	1.82[-4]	9.08[-5]
3	19	6.78[-3]	5.31[-3]	3.62[-3]	1.99[-3]	1.31[-3]	9.70[-4]	8.48[-4]	8.57[-4]
4	19	1.81[-2]	1.24[-2]	8.65[-3]	5.09[-3]	3.69[-3]	3.11[-3]	3.21[-3]	3.87[-3]
5	19	7.79[-3]	4.48[-3]	2.81[-3]	1.37[-3]	7.82[-4]	4.55[-4]	2.72[-4]	1.38[-4]
1	20	7.60[-2]	5.90[-2]	5.38[-2]	5.10[-2]	5.20[-2]	5.59[-2]	6.39[-2]	7.72[-2]
2	20	3.53[-2]	2.64[-2]	2.37[-2]	2.15[-2]	2.07[-2]	2.04[-2]	2.07[-2]	2.16[-2]
3	20	6.75[-5]	7.21[-5]	5.71[-5]	3.73[-5]	2.80[-5]	2.29[-5]	2.03[-5]	1.79[-5]
4	20	1.77[-4]	2.40[-4]	1.88[-4]	1.04[-4]	6.24[-5]	3.76[-5]	2.41[-5]	1.49[-5]
5	20	1.23[-4]	1.31[-4]	9.64[-5]	5.14[-5]	3.00[-5]	1.75[-5]	1.06[-5]	5.74[-6]
1	21	1.52[-2]	1.14[-2]	1.02[-2]	9.06[-3]	8.28[-3]	7.37[-3]	6.29[-3]	4.72[-3]
2	21	1.50[-1]	1.17[-1]	1.06[-1]	1.00[-1]	1.02[-1]	1.08[-1]	1.21[-1]	1.42[-1]
3	21	5.59[-5]	4.65[-5]	3.89[-5]	3.12[-5]	2.76[-5]	2.51[-5]	2.31[-5]	2.00[-5]
4	21	5.82[-5]	5.49[-5]	4.25[-5]	2.61[-5]	1.80[-5]	1.27[-5]	8.99[-6]	5.49[-6]
5	21	2.70[-4]	1.99[-4]	1.65[-4]	1.34[-4]	1.23[-4]	1.17[-4]	1.14[-4]	1.08[-4]
1	22	6.90[-3]	4.53[-3]	3.22[-3]	1.98[-3]	1.41[-3]	1.04[-3]	7.62[-4]	4.78[-4]
2	22	3.70[-2]	1.90[-2]	1.23[-2]	6.73[-3]	4.53[-3]	3.34[-3]	2.71[-3]	2.22[-3]
3	22	1.41[-2]	1.08[-2]	7.55[-3]	4.53[-3]	3.34[-3]	2.86[-3]	2.92[-3]	3.39[-3]
4	22	1.41[-2]	1.09[-2]	7.72[-3]	4.24[-3]	2.68[-3]	1.84[-3]	1.48[-3]	1.37[-3]
5	22	3.74[-2]	2.36[-2]	1.55[-2]	8.39[-3]	5.62[-3]	4.34[-3]	4.13[-3]	4.70[-3]
1	23	1.57[-3]	1.27[-3]	8.45[-4]	4.11[-4]	2.23[-4]	1.19[-4]	6.29[-5]	2.72[-5]
2	23	1.26[-2]	8.35[-3]	5.98[-3]	3.84[-3]	2.88[-3]	2.20[-3]	1.65[-3]	1.04[-3]
3	23	3.10[-3]	2.18[-3]	1.41[-3]	7.03[-4]	4.09[-4]	2.44[-4]	1.49[-4]	7.83[-5]
4	23	2.50[-2]	1.66[-2]	1.13[-2]	6.40[-3]	4.42[-3]	3.50[-3]	3.33[-3]	3.63[-3]
5	23	1.11[-1]	5.86[-2]	3.67[-2]	1.90[-2]	1.22[-2]	9.08[-3]	8.27[-3]	8.98[-3]
1	24	4.71[-2]	3.48[-2]	3.07[-2]	2.77[-2]	2.68[-2]	2.67[-2]	2.71[-2]	2.70[-2]
2	24	3.33[-3]	1.72[-3]	1.11[-3]	5.82[-4]	3.65[-4]	2.40[-4]	1.62[-4]	9.69[-5]
3	24	5.69[-3]	4.12[-3]	2.83[-3]	1.59[-3]	1.05[-3]	7.19[-4]	5.02[-4]	3.02[-4]
4	24	1.07[-2]	8.60[-3]	6.08[-3]	3.27[-3]	1.97[-3]	1.21[-3]	7.67[-4]	4.30[-4]
5	24	5.32[-3]	3.50[-3]	2.44[-3]	1.44[-3]	9.93[-4]	7.11[-4]	5.13[-4]	3.14[-4]
1	25	1.10[-3]	1.07[-3]	1.05[-3]	1.06[-3]	1.11[-3]	1.20[-3]	1.40[-3]	1.76[-3]
2	25	8.59[-5]	1.09[-4]	1.14[-4]	1.20[-4]	1.32[-4]	1.54[-4]	1.97[-4]	2.68[-4]

**Table 5.3.13b.** (continued)

Levels		$T(z^2\text{K})$							
$i$	$j$	100	500	1000	2500	5000	10000	20000	50000
3	25	9.16[-4]	9.04[-4]	8.81[-4]	8.51[-4]	8.16[-4]	7.52[-4]	6.55[-4]	4.93[-4]
4	25	2.49[-3]	2.48[-3]	2.43[-3]	2.40[-3]	2.39[-3]	2.35[-3]	2.27[-3]	2.02[-3]
5	25	2.53[-4]	2.35[-4]	2.30[-4]	2.30[-4]	2.32[-4]	2.30[-4]	2.24[-4]	2.04[-4]
1	26	1.12[-3]	1.10[-3]	1.07[-3]	1.03[-3]	9.98[-4]	9.92[-4]	1.06[-3]	1.24[-3]
2	26	9.59[-4]	9.27[-4]	9.05[-4]	9.02[-4]	9.21[-4]	9.74[-4]	1.15[-3]	1.57[-3]
3	26	1.80[-3]	1.75[-3]	1.73[-3]	1.67[-3]	1.60[-3]	1.49[-3]	1.36[-3]	1.12[-3]
4	26	1.93[-3]	1.91[-3]	1.86[-3]	1.80[-3]	1.76[-3]	1.71[-3]	1.68[-3]	1.55[-3]
5	26	2.64[-3]	2.48[-3]	2.39[-3]	2.30[-3]	2.22[-3]	2.11[-3]	1.97[-3]	1.71[-3]
1	27	5.64[-3]	2.64[-3]	1.65[-3]	8.15[-4]	4.78[-4]	2.90[-4]	1.85[-4]	1.06[-4]
2	27	1.12[-1]	7.26[-2]	5.99[-2]	5.02[-2]	4.70[-2]	4.59[-2]	4.60[-2]	4.54[-2]
3	27	6.14[-3]	4.20[-3]	2.69[-3]	1.32[-3]	7.48[-4]	4.34[-4]	2.66[-4]	1.55[-4]
4	27	1.03[-2]	6.33[-3]	4.28[-3]	2.40[-3]	1.60[-3]	1.12[-3]	8.11[-4]	5.32[-4]
5	27	2.58[-2]	1.60[-2]	1.05[-2]	5.69[-3]	3.68[-3]	2.50[-3]	1.74[-3]	1.05[-3]
1	28	1.09[-3]	1.07[-3]	1.04[-3]	9.92[-4]	9.30[-4]	8.26[-4]	6.81[-4]	4.57[-4]
2	28	1.56[-3]	9.81[-4]	8.58[-4]	7.60[-4]	7.15[-4]	6.74[-4]	6.34[-4]	5.90[-4]
3	28	3.37[-3]	3.33[-3]	3.25[-3]	3.22[-3]	3.23[-3]	3.23[-3]	3.19[-3]	2.88[-3]
4	28	1.81[-3]	1.76[-3]	1.70[-3]	1.62[-3]	1.54[-3]	1.39[-3]	1.19[-3]	8.61[-4]
5	28	1.10[-2]	1.09[-2]	1.07[-2]	1.07[-2]	1.08[-2]	1.10[-2]	1.11[-2]	1.06[-2]
1	29	3.08[-3]	2.62[-3]	2.55[-3]	2.64[-3]	2.95[-3]	3.63[-3]	5.00[-3]	7.60[-3]
2	29	7.88[-4]	6.80[-4]	6.61[-4]	6.47[-4]	6.59[-4]	7.04[-4]	8.15[-4]	1.02[-3]
3	29	2.00[-3]	1.68[-3]	1.60[-3]	1.50[-3]	1.40[-3]	1.25[-3]	1.07[-3]	8.02[-4]
4	29	1.30[-3]	1.20[-3]	1.16[-3]	1.11[-3]	1.05[-3]	9.71[-4]	8.74[-4]	6.98[-4]
5	29	1.57[-3]	1.41[-3]	1.33[-3]	1.25[-3]	1.16[-3]	1.02[-3]	8.38[-4]	5.58[-4]
1	30	2.63[-3]	2.58[-3]	2.56[-3]	2.62[-3]	2.74[-3]	3.02[-3]	3.67[-3]	4.94[-3]
2	30	9.49[-4]	9.30[-4]	8.99[-4]	8.89[-4]	9.23[-4]	1.04[-3]	1.35[-3]	2.02[-3]
3	30	1.24[-3]	1.21[-3]	1.19[-3]	1.16[-3]	1.12[-3]	1.04[-3]	9.20[-4]	7.16[-4]
4	30	1.46[-2]	1.45[-2]	1.43[-2]	1.43[-2]	1.44[-2]	1.44[-2]	1.43[-2]	1.35[-2]
5	30	5.72[-4]	4.42[-4]	4.06[-4]	3.75[-4]	3.46[-4]	3.08[-4]	2.67[-4]	2.08[-4]
1	31	5.62[-4]	5.05[-4]	4.86[-4]	4.66[-4]	4.52[-4]	4.36[-4]	4.40[-4]	5.01[-4]
2	31	4.62[-4]	2.98[-4]	2.45[-4]	2.12[-4]	2.06[-4]	2.11[-4]	2.28[-4]	2.70[-4]
3	31	2.32[-2]	2.32[-2]	2.30[-2]	2.33[-2]	2.41[-2]	2.54[-2]	2.71[-2]	2.78[-2]
4	31	1.03[-3]	1.00[-3]	9.67[-4]	9.23[-4]	8.71[-4]	7.86[-4]	6.65[-4]	4.68[-4]
5	31	1.76[-3]	1.62[-3]	1.57[-3]	1.53[-3]	1.52[-3]	1.51[-3]	1.49[-3]	1.38[-3]
1	32	3.82[-3]	3.91[-3]	4.11[-3]	4.49[-3]	4.91[-3]	5.68[-3]	7.38[-3]	1.10[-2]
2	32	6.69[-4]	5.99[-4]	5.63[-4]	5.24[-4]	4.80[-4]	4.04[-4]	3.14[-4]	2.34[-4]
3	32	1.19[-3]	1.15[-3]	1.08[-3]	1.01[-3]	9.36[-4]	8.28[-4]	6.87[-4]	4.73[-4]
4	32	7.86[-3]	8.04[-3]	8.00[-3]	7.90[-3]	7.71[-3]	7.44[-3]	7.20[-3]	6.80[-3]
5	32	2.54[-3]	2.51[-3]	2.44[-3]	2.32[-3]	2.19[-3]	1.99[-3]	1.74[-3]	1.33[-3]
1	33	8.00[-7]	7.70[-7]	7.43[-7]	6.96[-7]	6.40[-7]	5.51[-7]	4.34[-7]	2.71[-7]
2	33	2.45[-3]	2.40[-3]	2.32[-3]	2.20[-3]	2.06[-3]	1.82[-3]	1.50[-3]	1.00[-3]
3	33	2.35[-4]	2.30[-4]	2.23[-4]	2.13[-4]	2.00[-4]	1.78[-4]	1.45[-4]	9.66[-5]
4	33	3.92[-3]	3.87[-3]	3.78[-3]	3.73[-3]	3.70[-3]	3.64[-3]	3.50[-3]	3.04[-3]
5	33	7.28[-3]	7.16[-3]	6.99[-3]	6.83[-3]	6.71[-3]	6.48[-3]	6.11[-3]	5.18[-3]
1	34	1.85[-3]	1.76[-3]	1.69[-3]	1.74[-3]	1.93[-3]	2.25[-3]	2.71[-3]	3.18[-3]
2	34	3.38[-3]	3.26[-3]	3.21[-3]	3.26[-3]	3.38[-3]	3.73[-3]	4.62[-3]	6.30[-3]
3	34	4.24[-4]	4.38[-4]	4.27[-4]	4.12[-4]	4.04[-4]	3.79[-4]	3.22[-4]	2.18[-4]
4	34	2.46[-2]	2.44[-2]	2.40[-2]	2.40[-2]	2.41[-2]	2.43[-2]	2.49[-2]	2.50[-2]
5	34	2.62[-3]	2.50[-3]	2.54[-3]	2.50[-3]	2.36[-3]	2.17[-3]	1.95[-3]	1.57[-3]
1	35	1.26[-3]	1.21[-3]	1.19[-3]	1.30[-3]	1.52[-3]	1.88[-3]	2.41[-3]	3.11[-3]
2	35	2.16[-3]	2.12[-3]	2.11[-3]	2.06[-3]	2.05[-3]	2.22[-3]	3.00[-3]	5.34[-3]
3	35	4.89[-4]	4.96[-4]	4.96[-4]	5.07[-4]	5.12[-4]	4.84[-4]	4.12[-4]	2.78[-4]

**Table 5.3.13b.** (continued)

Levels		$T(z^2\text{K})$							
$i$	$j$	100	500	1000	2500	5000	10000	20000	50000
4	35	1.84[-2]	1.83[-2]	1.80[-2]	1.80[-2]	1.82[-2]	1.84[-2]	1.86[-2]	1.79[-2]
5	35	2.44[-3]	2.40[-3]	2.32[-3]	2.21[-3]	2.09[-3]	1.89[-3]	1.64[-3]	1.26[-3]
1	36	2.42[-4]	2.15[-4]	2.06[-4]	1.97[-4]	1.88[-4]	1.69[-4]	1.40[-4]	9.36[-5]
2	36	5.20[-3]	4.57[-3]	4.43[-3]	4.45[-3]	4.68[-3]	5.21[-3]	6.25[-3]	8.05[-3]
3	36	8.28[-4]	8.11[-4]	7.87[-4]	7.58[-4]	7.28[-4]	6.79[-4]	6.07[-4]	4.77[-4]
4	36	2.81[-3]	2.77[-3]	2.69[-3]	2.59[-3]	2.48[-3]	2.30[-3]	2.03[-3]	1.57[-3]
5	36	7.36[-2]	7.41[-2]	7.34[-2]	7.38[-2]	7.50[-2]	7.64[-2]	7.82[-2]	7.71[-2]
1	37	3.28[-5]	1.72[-5]	1.43[-5]	1.18[-5]	1.05[-5]	9.06[-6]	7.46[-6]	5.20[-6]
2	37	1.17[-2]	1.12[-2]	1.10[-2]	1.14[-2]	1.25[-2]	1.48[-2]	1.91[-2]	2.67[-2]
3	37	2.38[-4]	2.30[-4]	2.22[-4]	2.12[-4]	2.01[-4]	1.85[-4]	1.63[-4]	1.25[-4]
4	37	2.40[-3]	2.36[-3]	2.29[-3]	2.20[-3]	2.07[-3]	1.88[-3]	1.61[-3]	1.17[-3]
5	37	1.54[-2]	1.52[-2]	1.49[-2]	1.47[-2]	1.47[-2]	1.46[-2]	1.42[-2]	1.30[-2]
1	38	7.99[-4]	7.62[-4]	7.17[-4]	7.11[-4]	7.60[-4]	8.86[-4]	1.16[-3]	1.69[-3]
2	38	2.80[-3]	2.95[-3]	3.09[-3]	3.43[-3]	3.89[-3]	4.73[-3]	6.34[-3]	9.35[-3]
3	38	1.20[-3]	1.08[-3]	1.01[-3]	9.47[-4]	8.89[-4]	8.18[-4]	7.67[-4]	7.20[-4]
4	38	7.45[-4]	7.11[-4]	6.86[-4]	6.54[-4]	6.08[-4]	5.34[-4]	4.33[-4]	2.85[-4]
5	38	1.07[-3]	1.03[-3]	9.83[-4]	9.27[-4]	8.57[-4]	7.48[-4]	6.05[-4]	3.95[-4]
1	39	2.64[-3]	2.60[-3]	2.58[-3]	2.65[-3]	2.74[-3]	2.85[-3]	2.98[-3]	3.02[-3]
2	39	5.85[-4]	5.69[-4]	5.57[-4]	5.46[-4]	5.28[-4]	4.93[-4]	4.44[-4]	3.58[-4]
3	39	2.26[-5]	2.22[-5]	2.15[-5]	2.07[-5]	1.98[-5]	1.85[-5]	1.70[-5]	1.45[-5]
4	39	5.15[-5]	4.92[-5]	4.74[-5]	4.49[-5]	4.17[-5]	3.69[-5]	3.06[-5]	2.12[-5]
5	39	3.50[-5]	3.06[-5]	2.89[-5]	2.67[-5]	2.42[-5]	2.06[-5]	1.61[-5]	1.03[-5]
1	40	4.07[-4]	3.94[-4]	3.84[-4]	3.72[-4]	3.58[-4]	3.37[-4]	3.10[-4]	2.62[-4]
2	40	1.36[-2]	1.35[-2]	1.34[-2]	1.36[-2]	1.39[-2]	1.43[-2]	1.49[-2]	1.52[-2]
3	40	5.26[-5]	5.11[-5]	4.98[-5]	4.83[-5]	4.61[-5]	4.26[-5]	3.83[-5]	3.17[-5]
4	40	5.61[-5]	5.44[-5]	5.27[-5]	5.04[-5]	4.73[-5]	4.13[-5]	3.30[-5]	2.21[-5]
5	40	1.15[-4]	1.12[-4]	1.08[-4]	1.04[-4]	9.85[-5]	8.82[-5]	7.49[-5]	5.65[-5]
1	41	3.77[-4]	3.83[-4]	3.95[-4]	4.21[-4]	4.53[-4]	5.19[-4]	6.76[-4]	1.03[-3]
2	41	1.03[-3]	1.06[-3]	1.11[-3]	1.21[-3]	1.32[-3]	1.51[-3]	1.91[-3]	2.71[-3]
3	41	3.63[-4]	3.56[-4]	3.51[-4]	3.33[-4]	3.08[-4]	2.70[-4]	2.21[-4]	1.64[-4]
4	41	1.05[-4]	1.04[-4]	1.02[-4]	9.33[-5]	8.10[-5]	6.60[-5]	5.00[-5]	3.05[-5]
5	41	9.93[-5]	9.64[-5]	9.41[-5]	8.87[-5]	8.13[-5]	6.80[-5]	5.13[-5]	3.14[-5]
1	42	1.73[-4]	1.76[-4]	1.81[-4]	1.89[-4]	1.92[-4]	1.94[-4]	1.93[-4]	1.81[-4]
2	42	2.38[-3]	2.47[-3]	2.63[-3]	2.98[-3]	3.36[-3]	3.87[-3]	4.56[-3]	5.40[-3]
3	42	1.34[-4]	1.36[-4]	1.39[-4]	1.43[-4]	1.41[-4]	1.32[-4]	1.11[-4]	7.23[-5]
4	42	3.86[-4]	3.90[-4]	3.99[-4]	4.07[-4]	3.98[-4]	3.70[-4]	3.16[-4]	2.17[-4]
5	42	6.28[-4]	6.37[-4]	6.52[-4]	6.69[-4]	6.61[-4]	6.19[-4]	5.22[-4]	3.40[-4]
1	43	3.00[-4]	3.02[-4]	3.07[-4]	3.08[-4]	2.96[-4]	2.68[-4]	2.27[-4]	1.58[-4]
2	43	1.54[-3]	1.57[-3]	1.63[-3]	1.72[-3]	1.81[-3]	1.99[-3]	2.37[-3]	3.14[-3]
3	43	1.02[-5]	1.03[-5]	1.05[-5]	1.07[-5]	1.03[-5]	9.27[-6]	7.61[-6]	5.08[-6]
4	43	6.42[-5]	6.49[-5]	6.63[-5]	6.70[-5]	6.48[-5]	5.93[-5]	5.08[-5]	3.67[-5]
5	43	4.11[-4]	4.19[-4]	4.31[-4]	4.48[-4]	4.53[-4]	4.50[-4]	4.37[-4]	3.91[-4]
1	44	7.11[-4]	7.11[-4]	7.47[-4]	8.57[-4]	1.01[-3]	1.25[-3]	1.58[-3]	1.93[-3]
2	44	2.77[-3]	2.79[-3]	2.92[-3]	3.32[-3]	3.88[-3]	4.77[-3]	6.04[-3]	7.67[-3]
3	44	6.92[-5]	7.07[-5]	7.33[-5]	7.75[-5]	8.07[-5]	8.32[-5]	7.98[-5]	6.00[-5]
4	44	5.02[-4]	5.15[-4]	5.37[-4]	5.78[-4]	6.17[-4]	6.68[-4]	6.87[-4]	5.63[-4]
5	44	6.83[-4]	6.98[-4]	7.22[-4]	7.60[-4]	7.86[-4]	8.12[-4]	8.05[-4]	6.49[-4]
1	45	3.59[-4]	3.69[-4]	3.84[-4]	4.14[-4]	4.43[-4]	4.89[-4]	5.75[-4]	7.22[-4]
2	45	5.28[-4]	5.36[-4]	5.50[-4]	5.65[-4]	5.65[-4]	5.57[-4]	5.53[-4]	5.44[-4]
3	45	1.31[-4]	1.32[-4]	1.34[-4]	1.38[-4]	1.38[-4]	1.29[-4]	1.07[-4]	7.16[-5]
4	45	6.64[-5]	6.65[-5]	6.69[-5]	6.56[-5]	6.15[-5]	5.37[-5]	4.30[-5]	2.77[-5]
5	45	0.00[-5]	0.14[-5]	0.21[-5]	0.00[-5]	8.41[-5]	7.46[-5]	6.21[-5]	4.35[-5]