

**Table 5.3.15a.** The fifteen  $n = 2, 3$  and 4 fine-structure levels included in the calculation (97B1) and their observed energies in rydbergs (92R1) for Fe XXIV.  $\Delta = E_i(\text{BP}) - E_i(\text{obs})$ , where  $E_i(\text{BP})$  is from the Breit-Pauli R-matrix calculation. The index  $i$  is used in Table 5.3.15b for transition keys;  $J$  is the total angular momentum for specifying the fine-structure level.

i	$LS$ Term	$J$	Energy	$\Delta$	i	$LS$ Term	$J$	Energy	$\Delta$
1	2s $^2S$	1/2	0.0		9	4s $^2S$	1/2	113.584	0.035
2	2p $^2P$	1/2	3.57201	0.004	10	4p $^2P$	1/2	113.990	0.030
3		3/2	4.74549	-0.014	11		3/2	114.136	0.018
4	3s $^2S$	1/2	84.497	0.034	12	4d $^2D$	3/2	114.266	0.050
5	3p $^2P$	1/2	85.461	0.048	13		5/2	114.321	0.040
6		3/2	85.815	0.024	14	4f $^2F$	5/2	114.342	0.028
7	3d $^2D$	3/2	86.197	0.034	15		7/2	114.379	0.014
8		5/2	86.321	0.019					

**Table 5.3.15b.** The effective collision strengths  $\Upsilon(i, j)$  as a function of temperature  $T$ (K) for the transitions between the three  $n = 2$  levels and fourteen  $n' = 2, 3$  and 4 levels as specified in Table 5.3.15a for Fe xxiv (97B1).

Levels		$\log T$									
$i$	$j$	6.2	6.4	6.6	6.8	7.0	7.2	7.4	7.6	7.8	8.0
1	2	1.66[-1]	1.75[-1]	1.85[-1]	1.98[-1]	2.12[-1]	2.28[-1]	2.46[-1]	2.66[-1]	2.87[-1]	3.10[-1]
1	3	3.17[-1]	3.33[-1]	3.52[-1]	3.74[-1]	4.00[-1]	4.30[-1]	4.64[-1]	5.03[-1]	5.45[-1]	5.88[-1]
1	4	1.60[-2]	1.56[-2]	1.52[-2]	1.49[-2]	1.48[-2]	1.50[-2]	1.53[-2]	1.58[-2]	1.63[-2]	1.68[-2]
1	5	5.57[-3]	5.53[-3]	5.57[-3]	5.79[-3]	6.33[-3]	7.28[-3]	8.75[-3]	1.08[-2]	1.34[-2]	1.66[-2]
1	6	1.04[-2]	1.04[-2]	1.05[-2]	1.10[-2]	1.20[-2]	1.38[-2]	1.65[-2]	2.03[-2]	2.51[-2]	3.10[-2]
1	7	1.28[-2]	1.27[-2]	1.26[-2]	1.26[-2]	1.28[-2]	1.33[-2]	1.41[-2]	1.50[-2]	1.61[-2]	1.71[-2]
1	8	1.96[-2]	1.95[-2]	1.93[-2]	1.92[-2]	1.94[-2]	2.01[-2]	2.12[-2]	2.26[-2]	2.44[-2]	2.64[-2]
1	9	2.50[-3]	2.51[-3]	2.53[-3]	2.56[-3]	2.62[-3]	2.72[-3]	2.84[-3]	2.98[-3]	3.11[-3]	3.22[-3]
1	10	1.10[-3]	1.13[-3]	1.17[-3]	1.25[-3]	1.37[-3]	1.56[-3]	1.83[-3]	2.20[-3]	2.68[-3]	3.26[-3]
1	11	2.18[-3]	2.23[-3]	2.32[-3]	2.47[-3]	2.71[-3]	3.06[-3]	3.56[-3]	4.27[-3]	5.18[-3]	6.32[-3]
1	12	2.10[-3]	2.09[-3]	2.09[-3]	2.09[-3]	2.10[-3]	2.13[-3]	2.19[-3]	2.28[-3]	2.40[-3]	2.54[-3]
1	13	3.17[-3]	3.16[-3]	3.15[-3]	3.16[-3]	3.18[-3]	3.22[-3]	3.31[-3]	3.44[-3]	3.60[-3]	3.78[-3]
1	14	1.23[-3]	1.21[-3]	1.19[-3]	1.17[-3]	1.15[-3]	1.13[-3]	1.13[-3]	1.14[-3]	1.15[-3]	1.16[-3]
1	15	1.65[-3]	1.62[-3]	1.59[-3]	1.56[-3]	1.53[-3]	1.51[-3]	1.51[-3]	1.52[-3]	1.54[-3]	1.57[-3]
2	3	3.73[-2]	4.12[-2]	4.29[-2]	4.17[-2]	3.81[-2]	3.35[-2]	2.90[-2]	2.52[-2]	2.23[-2]	2.02[-2]
2	4	4.74[-3]	3.72[-3]	2.95[-3]	2.38[-3]	2.00[-3]	1.80[-3]	1.75[-3]	1.85[-3]	2.08[-3]	2.42[-3]
2	5	1.65[-2]	1.60[-2]	1.56[-2]	1.53[-2]	1.51[-2]	1.52[-2]	1.54[-2]	1.57[-2]	1.60[-2]	1.63[-2]
2	6	7.16[-3]	6.70[-3]	6.00[-3]	5.25[-3]	4.57[-3]	4.02[-3]	3.63[-3]	3.36[-3]	3.21[-3]	3.15[-3]
2	7	5.39[-2]	5.53[-2]	5.73[-2]	6.05[-2]	6.52[-2]	7.22[-2]	8.19[-2]	9.46[-2]	1.10[-1]	1.29[-1]
2	8	1.27[-2]	1.19[-2]	1.06[-2]	9.20[-3]	7.83[-3]	6.63[-3]	5.63[-3]	4.86[-3]	4.30[-3]	3.91[-3]
2	9	4.30[-4]	4.13[-4]	3.93[-4]	3.73[-4]	3.55[-4]	3.44[-4]	3.45[-4]	3.63[-4]	3.99[-4]	4.53[-4]
2	10	2.75[-3]	2.73[-3]	2.72[-3]	2.72[-3]	2.74[-3]	2.79[-3]	2.87[-3]	2.96[-3]	3.04[-3]	3.10[-3]
2	11	1.40[-3]	1.34[-3]	1.27[-3]	1.18[-3]	1.08[-3]	9.82[-4]	8.92[-4]	8.18[-4]	7.63[-4]	7.28[-4]
2	12	9.90[-3]	1.01[-2]	1.04[-2]	1.09[-2]	1.16[-2]	1.26[-2]	1.40[-2]	1.57[-2]	1.79[-2]	2.05[-2]
2	13	2.57[-3]	2.43[-3]	2.25[-3]	2.04[-3]	1.79[-3]	1.53[-3]	1.29[-3]	1.07[-3]	8.85[-4]	7.35[-4]
2	14	1.70[-3]	1.71[-3]	1.74[-3]	1.80[-3]	1.90[-3]	2.05[-3]	2.25[-3]	2.49[-3]	2.77[-3]	3.06[-3]
2	15	1.05[-3]	9.84[-4]	8.99[-4]	8.02[-4]	6.97[-4]	5.95[-4]	5.04[-4]	4.30[-4]	3.76[-4]	3.40[-4]
3	4	1.04[-2]	8.31[-3]	6.63[-3]	5.36[-3]	4.48[-3]	4.00[-3]	3.87[-3]	4.08[-3]	4.60[-3]	5.39[-3]
3	5	8.01[-3]	7.34[-3]	6.49[-3]	5.63[-3]	4.89[-3]	4.30[-3]	3.89[-3]	3.62[-3]	3.49[-3]	3.44[-3]
3	6	4.10[-2]	4.00[-2]	3.86[-2]	3.73[-2]	3.62[-2]	3.57[-2]	3.56[-2]	3.58[-2]	3.62[-2]	3.66[-2]
3	7	2.69[-2]	2.62[-2]	2.50[-2]	2.39[-2]	2.32[-2]	2.31[-2]	2.39[-2]	2.55[-2]	2.80[-2]	3.13[-2]
3	8	1.11[-1]	1.13[-1]	1.16[-1]	1.20[-1]	1.28[-1]	1.40[-1]	1.57[-1]	1.80[-1]	2.08[-1]	2.42[-1]
3	9	8.68[-4]	8.34[-4]	7.96[-4]	7.57[-4]	7.23[-4]	7.05[-4]	7.14[-4]	7.58[-4]	8.40[-4]	9.60[-4]
3	10	1.38[-3]	1.32[-3]	1.25[-3]	1.16[-3]	1.07[-3]	9.77[-4]	8.97[-4]	8.36[-4]	8.00[-4]	7.90[-4]
3	11	7.29[-3]	7.22[-3]	7.12[-3]	7.04[-3]	7.02[-3]	7.08[-3]	7.20[-3]	7.35[-3]	7.48[-3]	7.58[-3]
3	12	5.10[-3]	4.97[-3]	4.82[-3]	4.65[-3]	4.50[-3]	4.40[-3]	4.39[-3]	4.50[-3]	4.76[-3]	5.15[-3]
3	13	2.03[-2]	2.06[-2]	2.10[-2]	2.17[-2]	2.28[-2]	2.44[-2]	2.67[-2]	2.98[-2]	3.37[-2]	3.85[-2]
3	14	1.91[-3]	1.82[-3]	1.72[-3]	1.61[-3]	1.50[-3]	1.41[-3]	1.35[-3]	1.33[-3]	1.34[-3]	1.38[-3]
3	15	3.83[-3]	3.81[-3]	3.81[-3]	3.85[-3]	3.95[-3]	4.14[-3]	4.43[-3]	4.82[-3]	5.29[-3]	5.79[-3]