ASTRONOMY 020
Problem Set #8
Due: November 14, 2003

1. Explain why a star with temperature 10,000 K will exhibit stronger Balmer lines than a star that is either cooler or hotter. Refer to Figure 8-13 when giving your explanation.

2. Estimate the line width from thermal Doppler broadening for the Ca II K line at 393.3 nm for a star at 3000 K.

3. Zeilik & Gregory, Chapter 8, problem 16. (Hint: use $g_1 = 2$ and $g_2 = 8$).

Practice problem:

1. Zeilik & Gregory, Chapter 8, problem 10. Use $\chi_0 = 5.1$ eV $= 8.17 \times 10^{-19}$ J for Sodium. Answers: (a) $v = 1.34 \times 10^3$ km/s, (b) $v = 31.3$ km/s, (c) $T = 39,500$ K, (d) $\Delta\lambda/\lambda_0 = 2.2 \times 10^{-5}$.