Lab Preparation - Spectral Classification of the Stars

Before the first lab session:

Read entirely the lab manual Spectral Classification of the Stars.

Note that in this lab wavelengths are given in units of Ångstroms (Å) rather than nanometers (nm). One Å is 10^{-10} m while 1 nm is 10^{-9} m, so there are 10 Å in 1 nm. Thus you can convert from Å to nm simply by moving the decimal point one number to the left. For example, 4567Å = 456.7 nm.

Answer the following questions to check your understanding of the basic ideas.

1)

a) Think up an original mnemonic for the spectral type sequence OBAFGKM.

b) Which star is closer to an O8 star in spectral type, a B3 star or an F3 star? Which star is closer to an O8 star in spectral type, a B3 star or a B8 star?

2) A copy of Figure 1 from your lab manual is shown on the back.

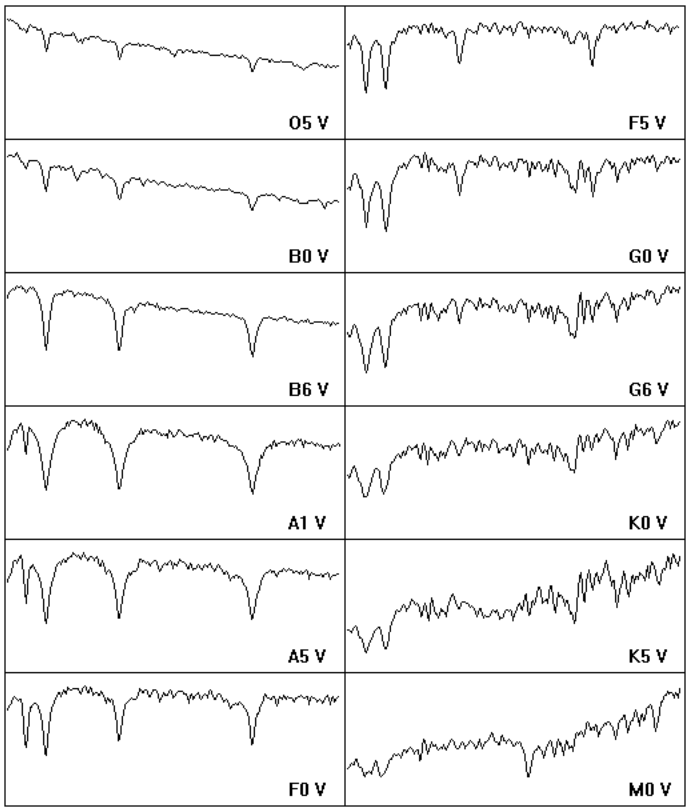
a) Identify on the figure those absorption lines which best permit you to distinguish between an F5 V star and a G0 V star. Concentrate on the relative depths of pairs of absorption lines, and look for absorption lines whose depths change most dramatically between the two spectral types.

b) Do the same for an A1 V star and an A5 V star. For an 05 V star and a B0 V star.

3) Suppose star X in the Pleiades cluster has a magnitude of 3.5 and star Y in the Pleiades cluster has a magnitude of 8.5.

a) Which star is brighter?

b) How many times brighter?


O5 V
F5 V
B0 V
G0 V
B6 V
G6 V
A1 V
K0 V
A5 V
K5 V
F0 V
M0 V