Doppler Shift

Red/Blue Shift

1) changes position of spectral lines – not the star's color.

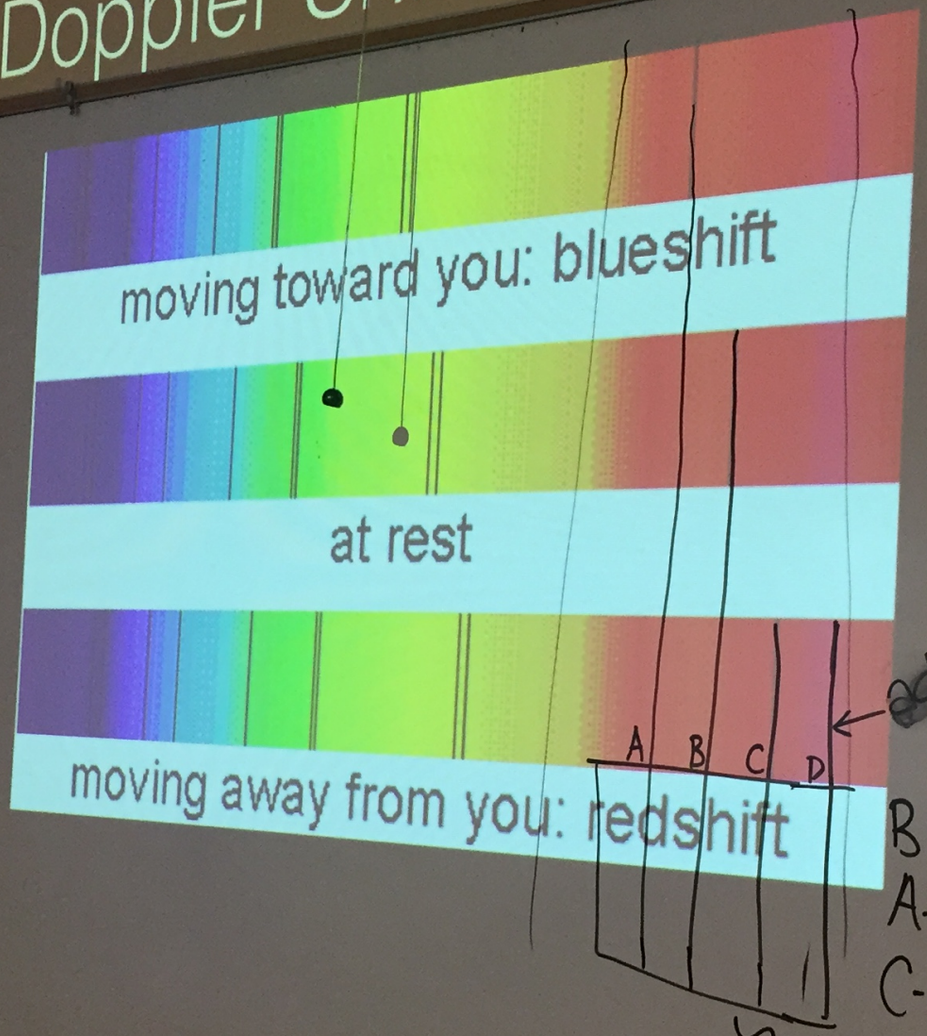
2) Can't tell from shift: Distance, Size, Color etc.
   Can know: Toward (Blue) - or - Away (Red)

3) Comparing Spectral lines. a) label blue side & red side of spectra
   b) choose one line & compare based on instructions.

4) Given Specific wavelengths
   a) find rest λ
   b) subtract all the other λ from rest λ

λ is the symbol for wavelength

Doppler Shift Continued



added for example.

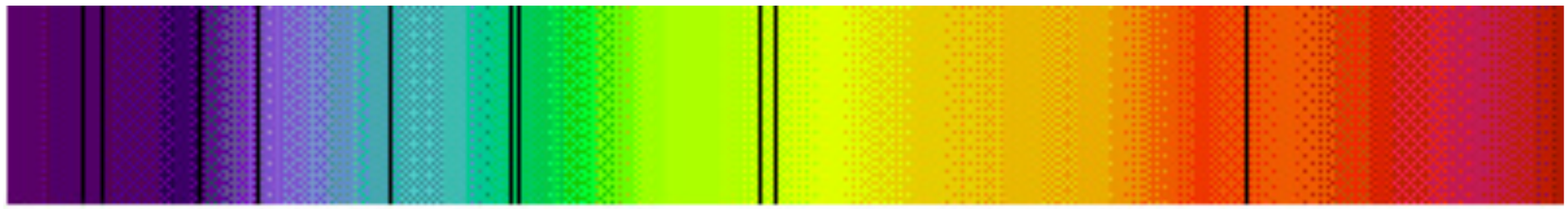
B is at rest
A-Blue-toward.
C-Red- away.

red shifted.
↳Dis shifted more → going faster

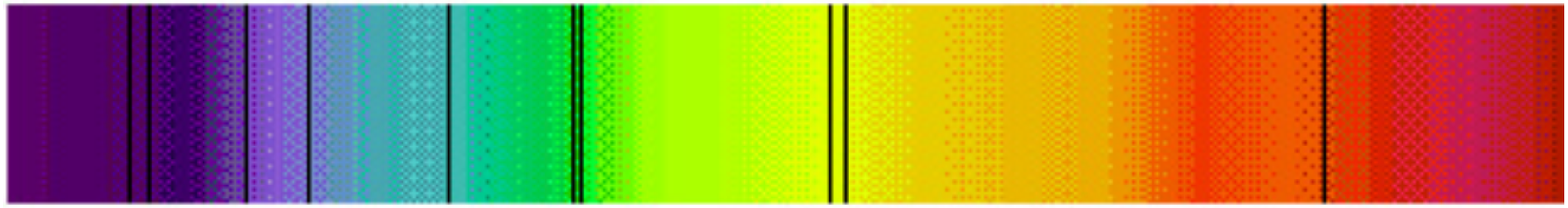
We made up a 4th line, D. In this example we were told that two were red shifted and one was blue shifted. One was at rest.

Choose a well defined line and use that to compare to all the available spectra. In this case we chose one in the red side of the spectrum.

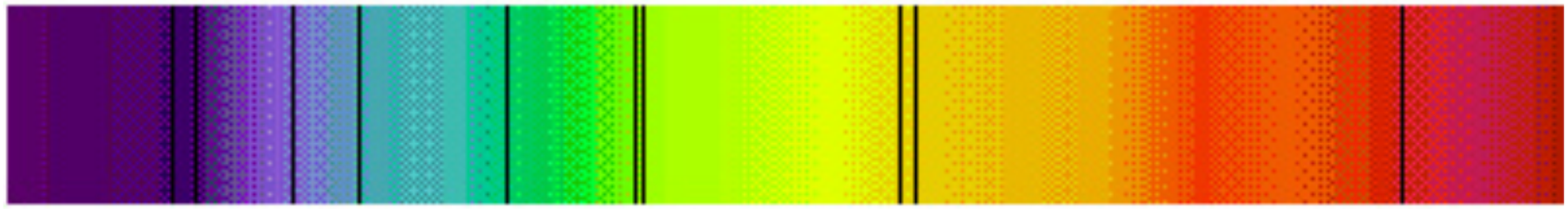
Original Image



moving toward you: blueshift



at rest



moving away from you: redshift

An important line in the absorption spectrum of stars occurs at a wavelength of 656nm for stars at rest. Imagine that you observe five stars (A-E) from Earth and discover that this absorption line is at the wavelength shown in the table below for each of the five stars.

STAR	Wavelength of Absorption line		Difference		R/B
A	TOWARD	649 nm	7	shorter	-bluer
B	AWAY fastest away	660 nm	-4	longer	-redder
C	REST	656 nm	0		
D	AWAY	658 nm	-2	longer	-redder
E	TOWARD-FASTEST toward.	647 nm	9	shorter	-bluer

Rest - Nonrest

Neg → red (away)

Pos → blue (toward)

toward Earth to moving fastest away from Earth.

e) E,A,C,D,B