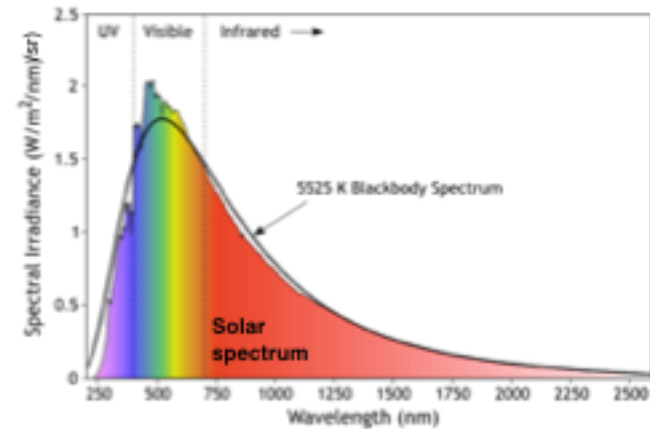


Today

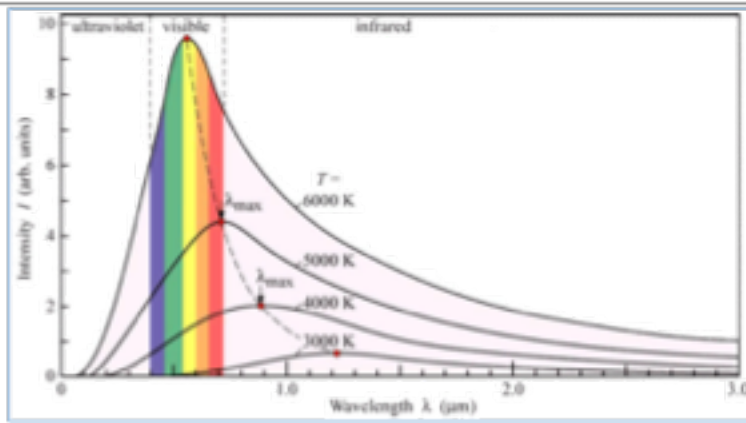
- Blackbody radiation in outer space!
- Quantifying stellar color (and properties) the easy way.
- Hertzsprung-Russell Diagrams (HR Diagrams)
 - Star properties
 - Stellar evolution

1

Blackbody Spectrum

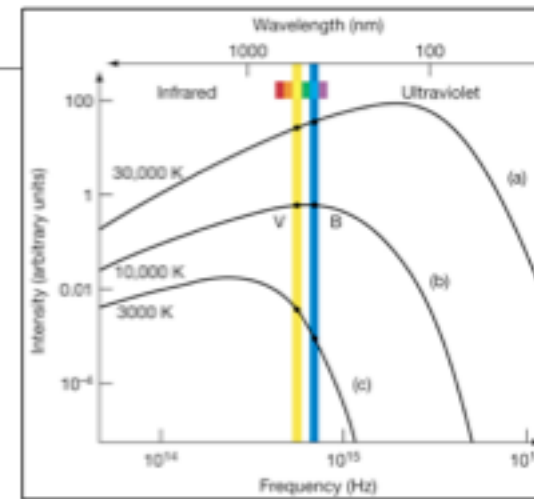


2



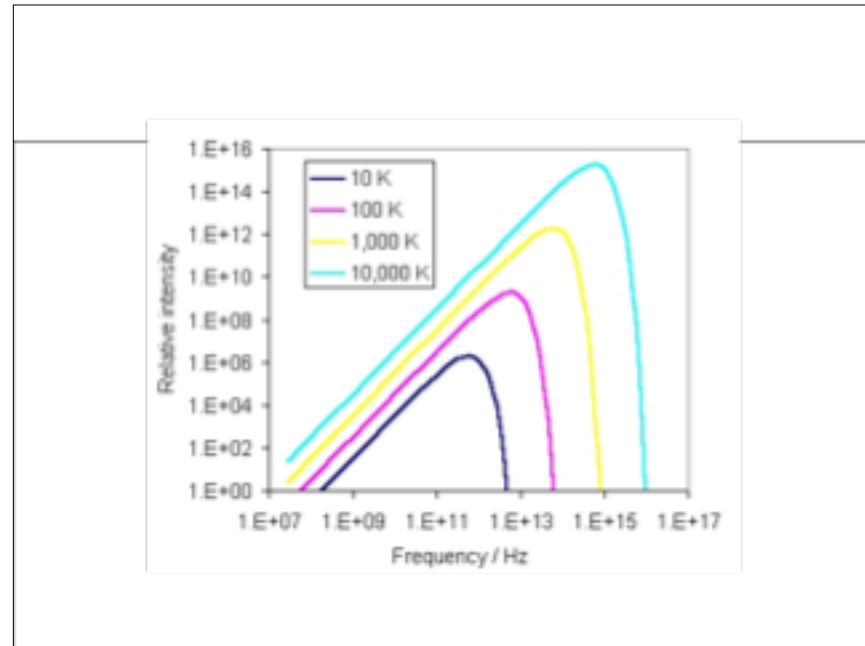
Linear scale vs. wavelength

3



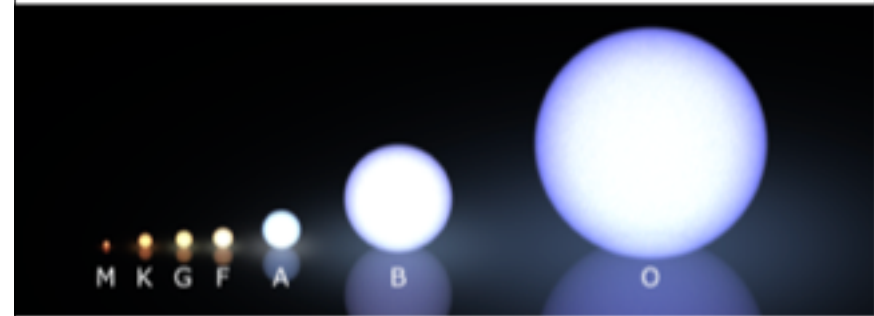
Log scale vs frequency

4



5

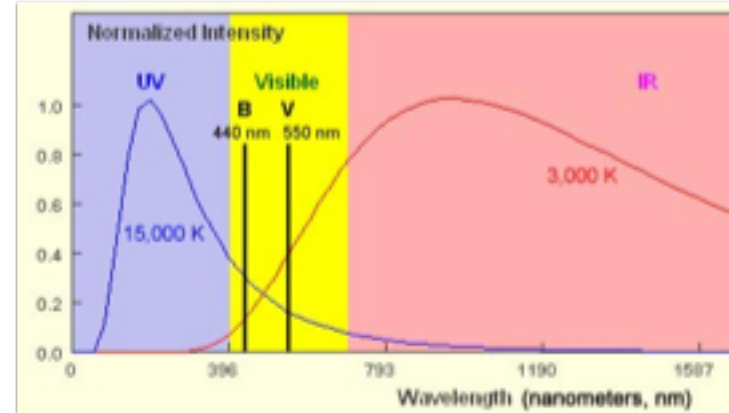
On the main sequence...



(Note, red giants have large radii but are not very massive)

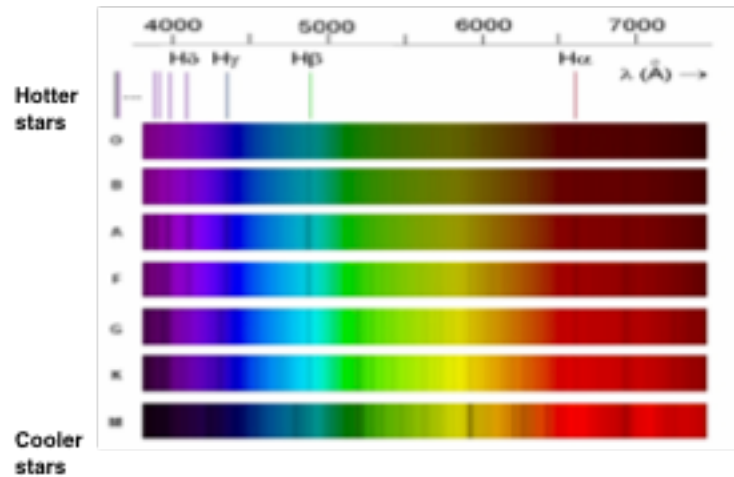
6

Color indices

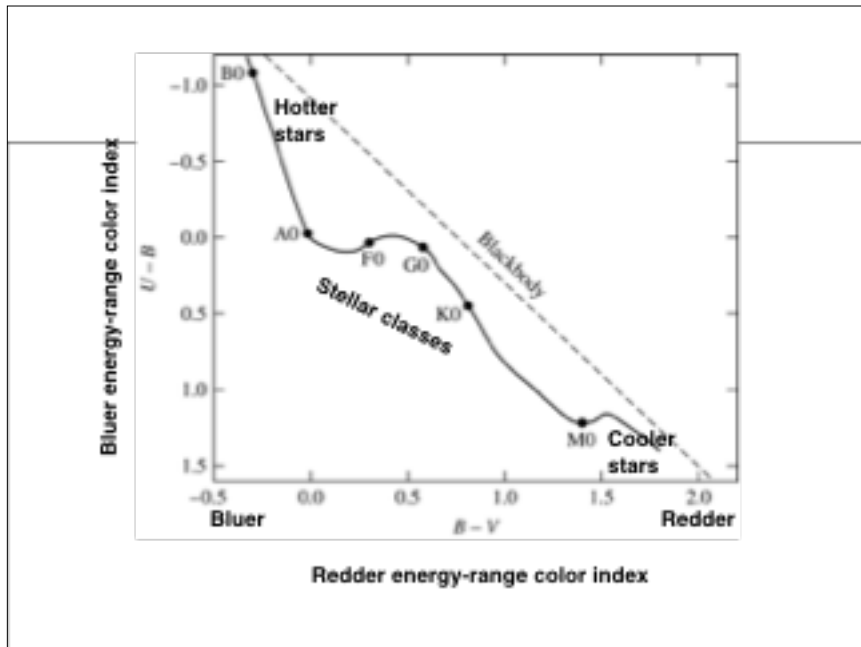


Color index = $m_{\text{short}} - m_{\text{long}}$

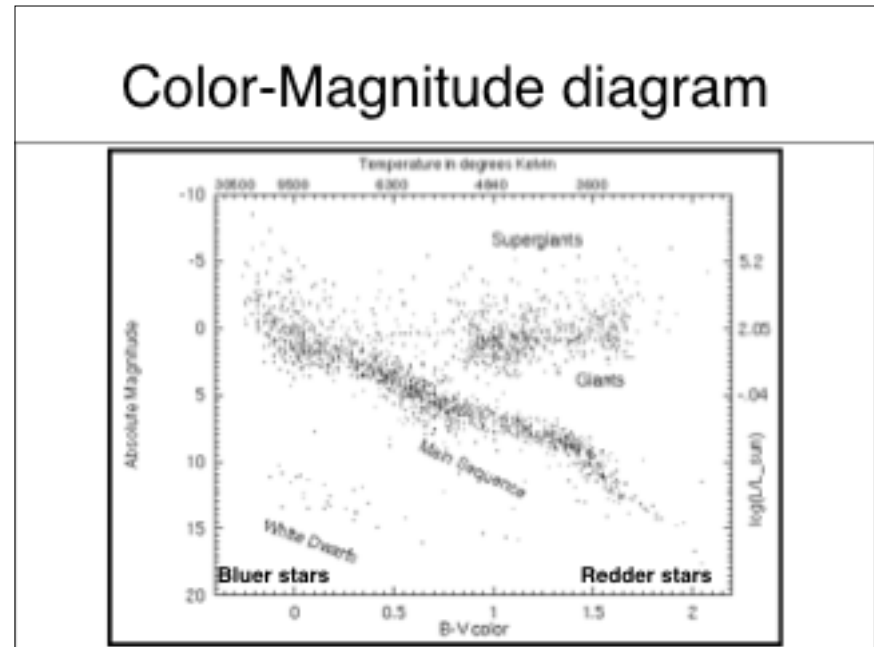
8



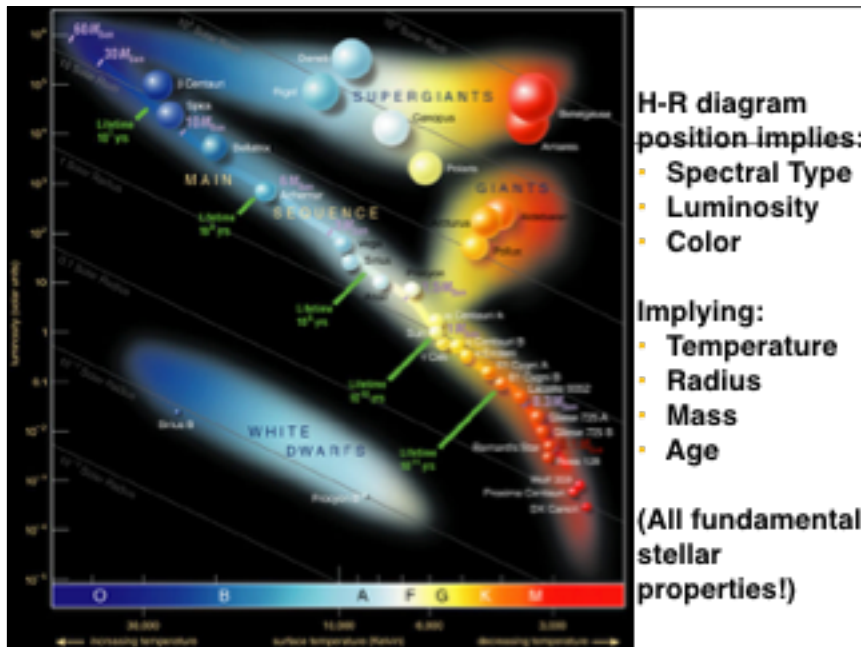
7



9



10



11

Basic Star Facts

Spectral classes have defined
temperatures, luminosities, and masses

Temperatures (degrees K)	Luminosity (times Solar)	Mass (times Solar)
O - 50,000 K	O - 10^7	O - 25
B - 20,000 K	B - 10^4	B - 10
A - 10,000 K	A - 20	A - 2
F - 8,000 K	F - 3	F - 1.5
G - 6,000 K	G - 1	G - 1
K - 4,000 K	K - 0.1	K - 0.5
M - 3,000 K	M - 10^{-3}	M - 0.2

12

Rules of thumb

- Hot stars live fast and die young.
- Less massive, cooler stars live longer.