Today

- Apparent and absolute magnitudes.
  - Distance modulus
- Blackbody radiation from outer space!
- Intervening "stuff" and effects on spectra.
  - Kirchhoff's laws
  - Optical depth

Johnson Filters

m_Y = -26.74

m_Y = +0.03
Kirchoff’s Laws

- Dense objects produce a blackbody spectrum
- Hot diffuse gas (and plasma) produce emission lines
- Hot dense object seen through big, diffuse object makes you see absorption lines.