

AST 250 – Fall 2017
Homework Due: Monday February 5th

13. The first exoplanet to be discovered around a main sequence star was a half-Jupiter mass planet orbiting very close to the star 51 Pegasi ($m_V = +5.49$ mag, $D = 15.61$ pc).

- (a) What is the absolute visual magnitude of 51 Peg?
- (b) How does the luminosity of 51 Peg compare to the Sun (quote as ratio to L_{sun})? Use information you derived from part (a) to calculate the luminosity.
- (c) The spectrum of 51 Peg peaks at a wavelength of 520.3 nm. How big is 51 Peg compare to the Sun (quote as a ratio to R_{sun})?
- (d) If the planet 51 Peg b orbits at a radius of 0.053 AU on a 4.23 day orbit, how many times larger is the incident flux on the planet's atmosphere than the solar flux at the Earth? (use $T = 5780$ K for the Sun).

