

AST 250 – Spring 2018

Homework Due: Monday April 9

32. The lightcurve for the transiting exoplanet Kepler-7b indicates that the flux from the star is reduced by 0.68% periodically by a planet on a 4.885 day orbit. Radial velocity measurements confirm it is a planet with 0.433 times the mass of Jupiter. Calculate the density of Kepler-7b and compare your answer to the density of water (1 g/cm^3 or 1000 kg/m^3). Can you explain why it might have this density (Hint: also calculate its semi-major axis and incident flux)? Some info about the star: G0V, $M \sim 1.347 M_{\text{sun}}$, $R \sim 1.843 R_{\text{sun}}$, $L \sim 4.15 L_{\text{sun}}$.

