

The first plot below shows the intensity of light from a star during seven days, dimmed by a planet crossing in front. The star has a radius of 2×10^9 meters.

- What is the orbital period of the planet (in days)?
- What is the radius of the planet (in meters)? Show your work.
- At your telescope with a spectrometer, you take a spectrum of the star every minute during those same 7 days, allowing you to measure the wavelength (λ) of a spectral line from hydrogen in the star. Sketch a plot of the Doppler shift, $\Delta\lambda$, during those same 7 days. Use the plot axes provided to make your sketch.

