

P1

4/5/2022

Goal: make model of binary star system which matches all observations.

- use your light curve to verify period against catalog
- use max light and Gaia dist to compute abs mag in B, V — this should provide constraints on total mass of system
- look at table of isochrone models to help with this
- measure depths of pri & sec eclipse depth
- use depths to estimate ratio of temperatures
- if possible, find radial velocity curves
 - 1) use to compute mass ratio $q \equiv m_2/m_1$
 - 2) use to compute size of semimajor axis a
 - 3) use ~~to~~ w/ eclipse widths to compute sizes of stars

Now, with all this info, use StarLight Pro to create model of light curve which matches the measured light curve.

- key features

depth of dips

shape of primary dip

color change (B-V) vs. model (blue-green)

As a final check, try to estimate the mass of each star (easy if you have radial velocities, hard if you don't).

p2

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In theory, the masses of the two stars should

- a) allow you to look up luminosity in isochrone table and yield the expected abs mag
- b) yield mass ratio q consistent with radial vel
- c) " " " " " " light curve
- d) yield temperatures roughly in line with observed temp ratio ... unless the two stars' envelopes have merged
- e) allow you to compute velocities of stars in orbit
→ size of each star
consistent with stellar isochrones

Thoughts on Cap II papers + presentations

- small fraction a summary of observing and making light curve
- ~~discussion~~ comparison of your light curve to others from literature
- your period vs. period from literature
- (O-C) diagram: explain briefly what it is; can we learn anything from it about your system?
- modelling light curve and your final system parameters