Introduction to Astronomy
AA 201
Fall Semester 2019

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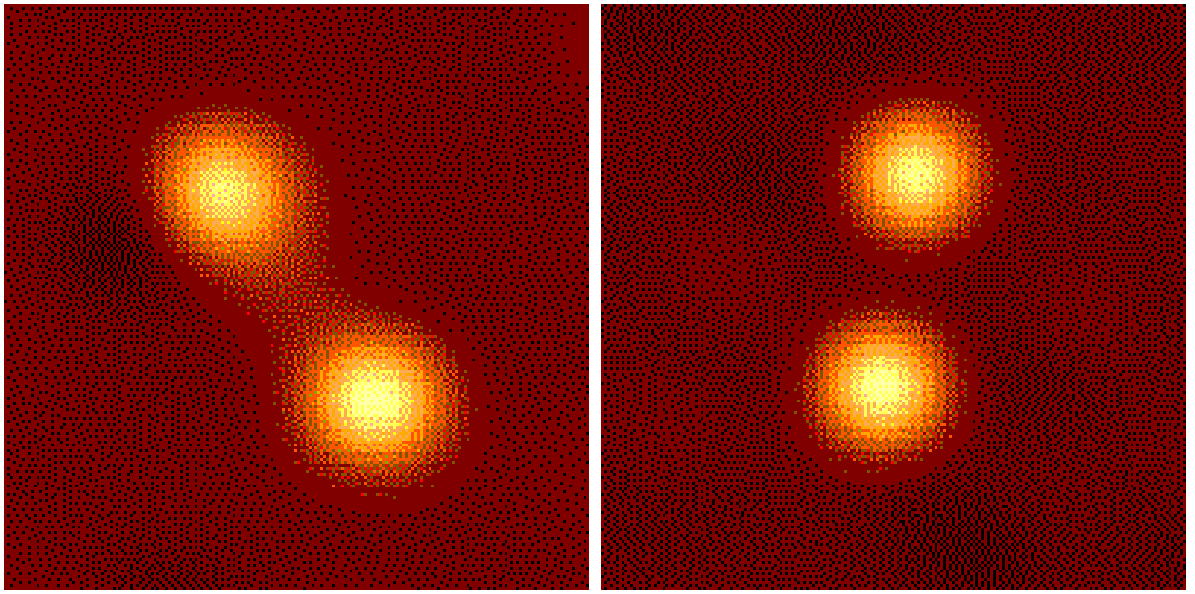
Course webpage:
http://www.iiti.ac.in/people/~manoneeta/courses/AA201_2019/

Binarie stars

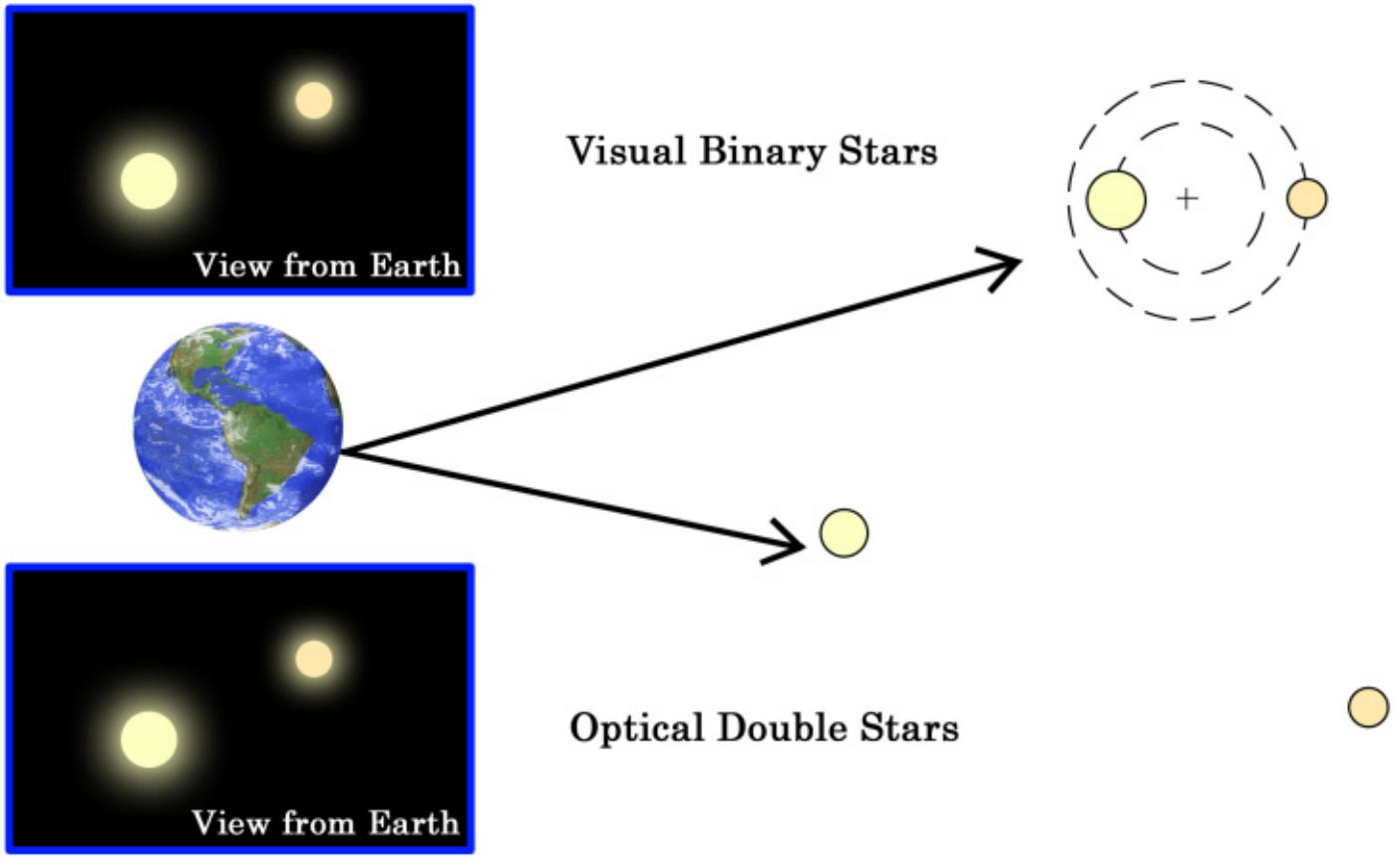
- Visual
- Eclipsing
- Spectroscopic
- Contact

Visual Binary

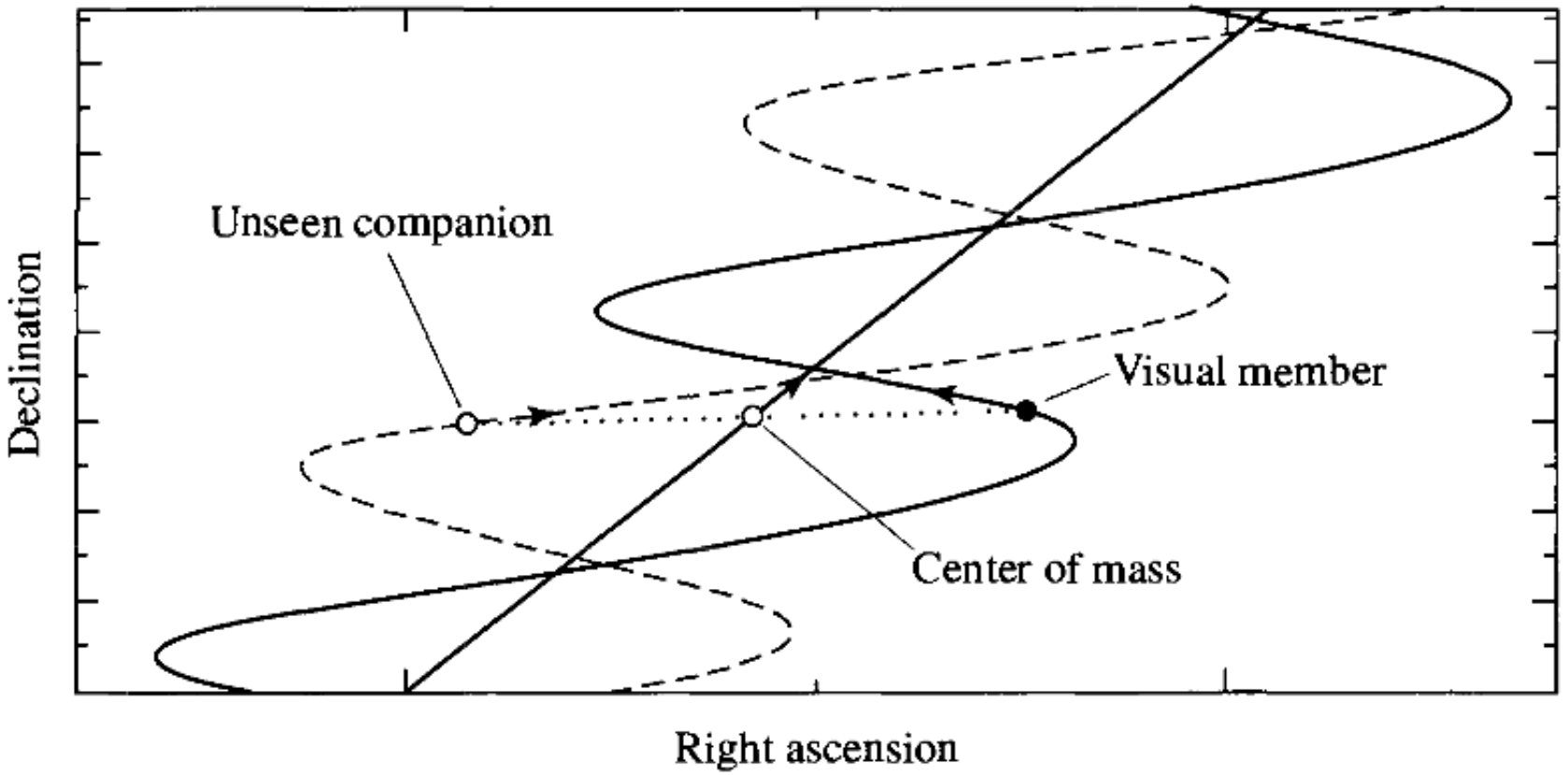


Images of Capella taken on the 13th (left) and 28th (right) September 1995. The separation between the stars is 55 milli-arcsec.

Be careful!

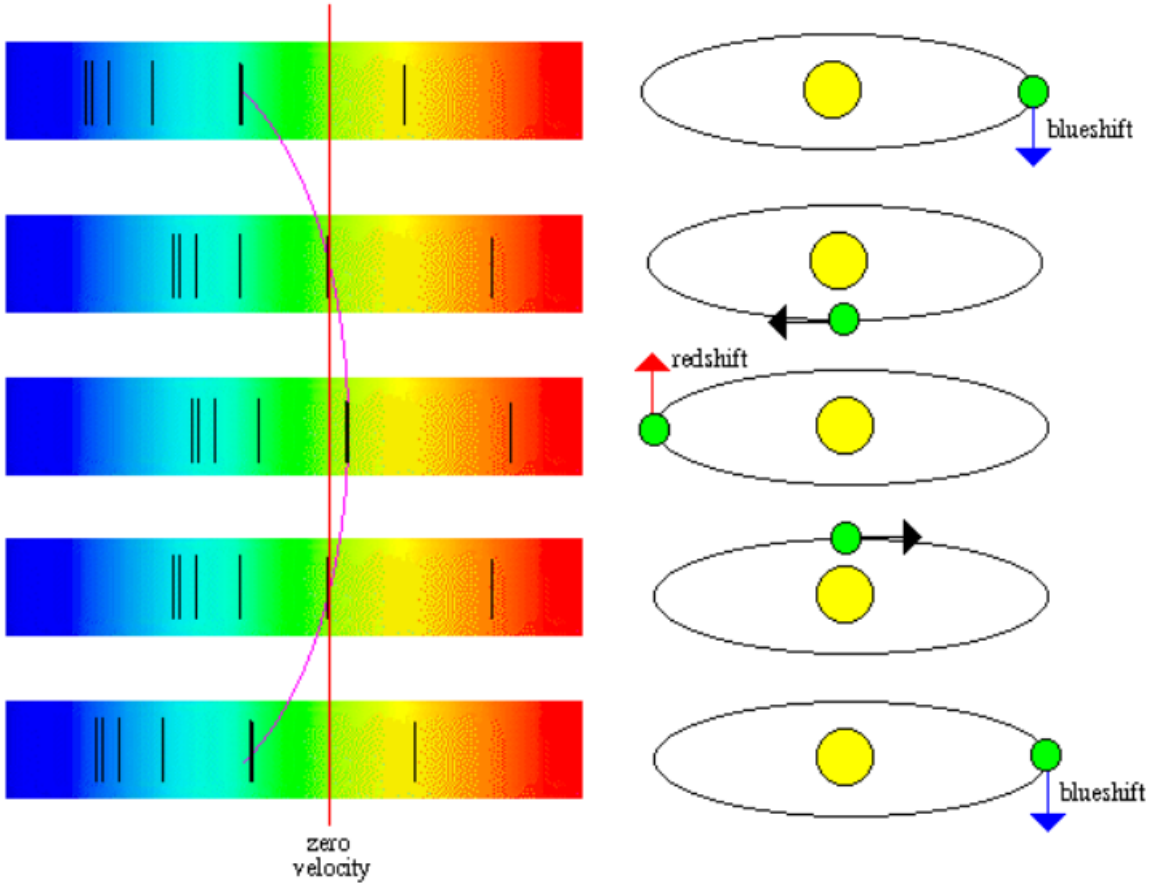

View from Earth
Visual Binary Stars
View from Earth
Optical Double Stars

Astrometric binary

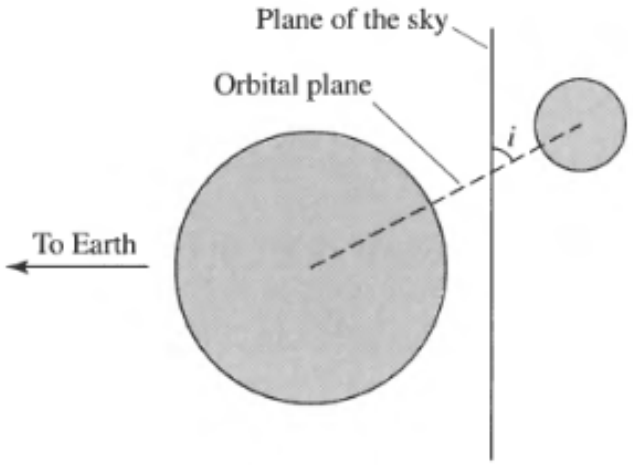


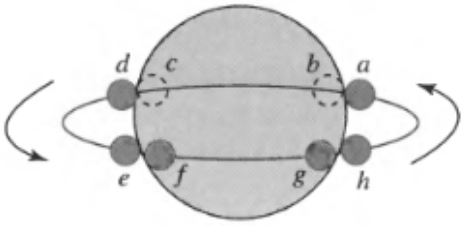
Spectroscopic Binaries

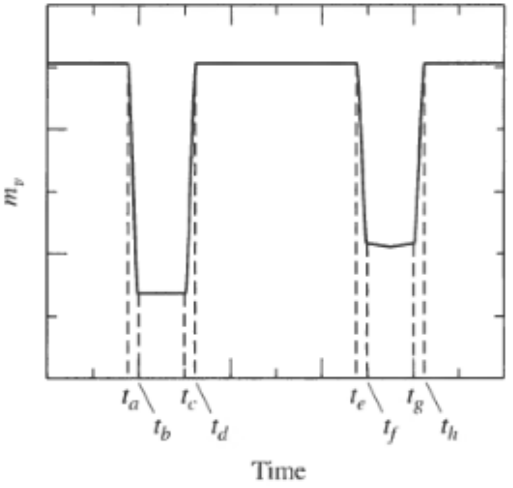
A spectroscopic binary is where there is evidence of orbital motion in the spectral features due to the Doppler effect

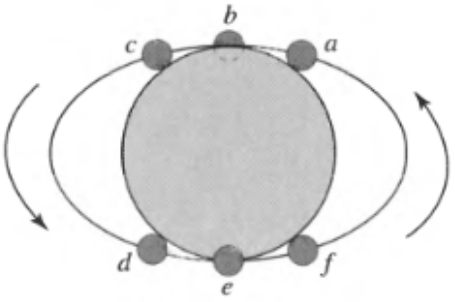


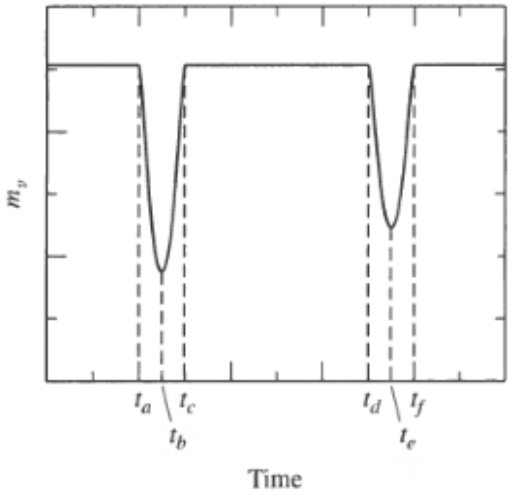
Eclipsing Binaries

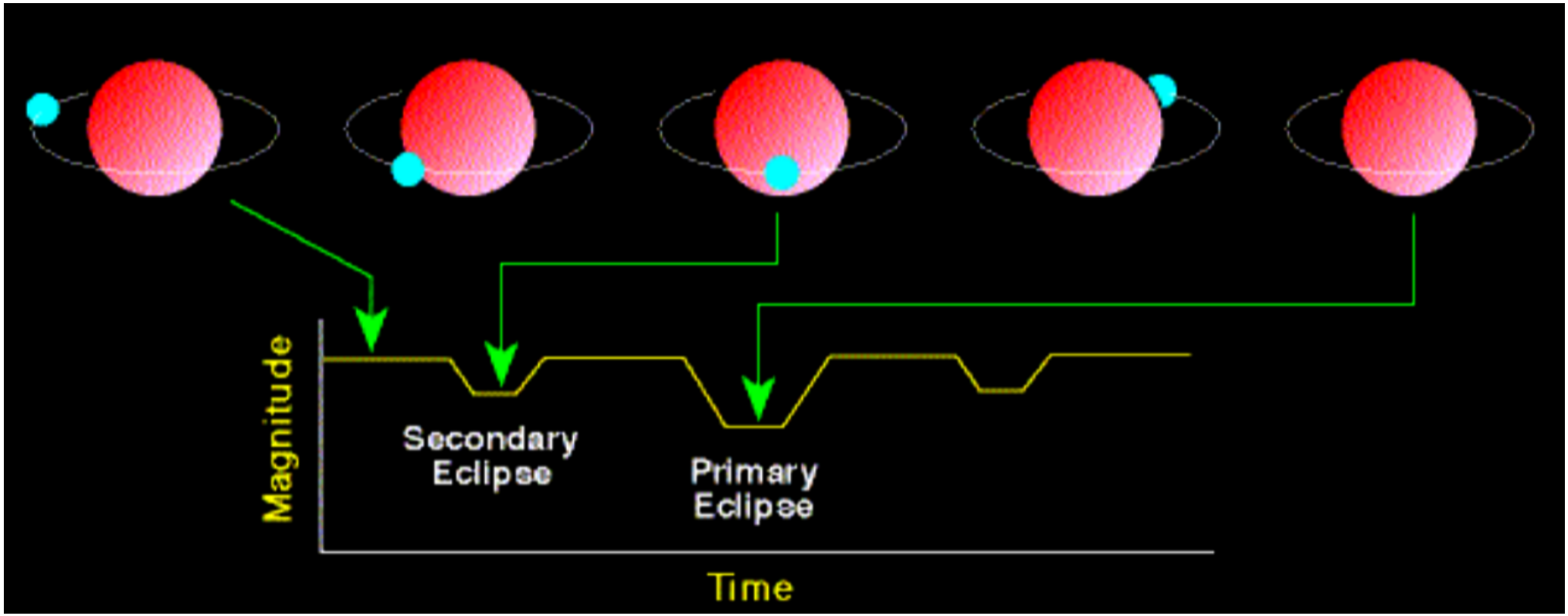




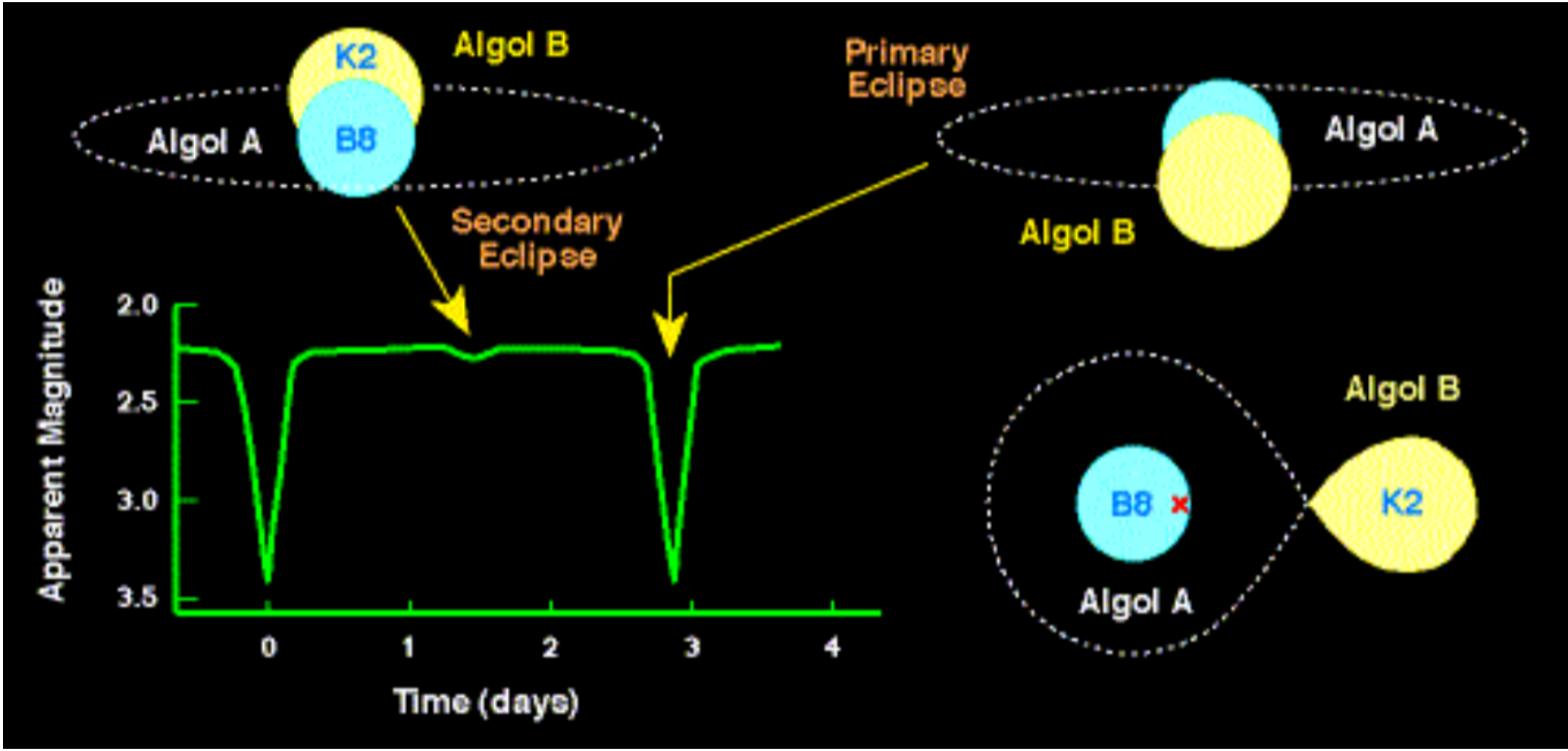




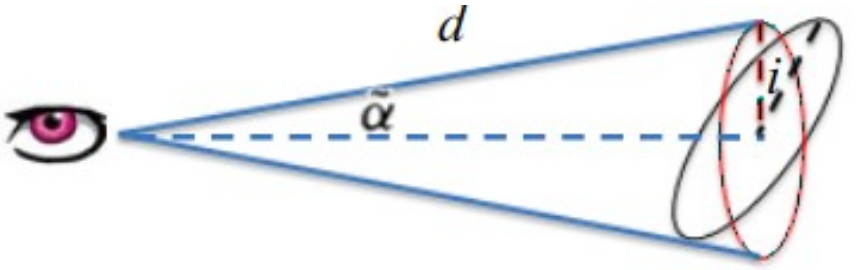


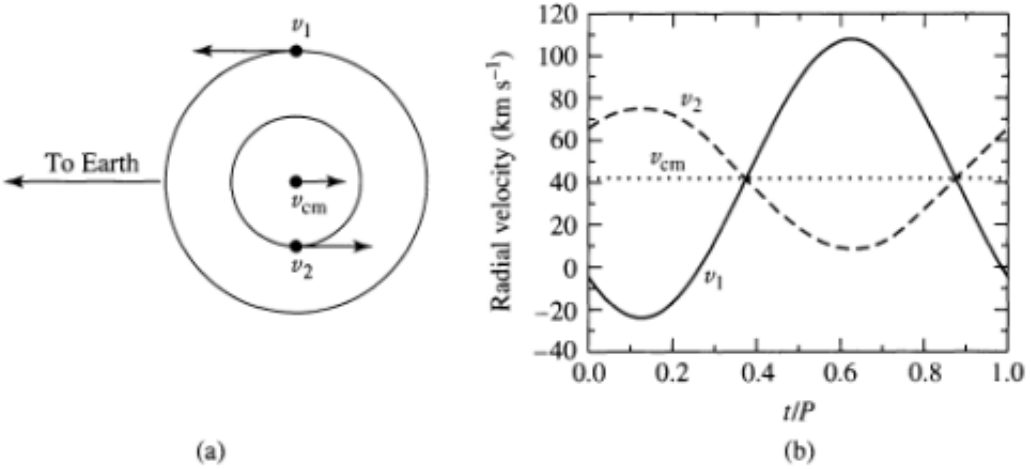

Magnitude
Secondary Eclipse
Primary Eclipse
Time

- Why is the eclipse of the B8 star deeper than the eclipse of the K2 star?
- Why don't the minima have flat bottoms?

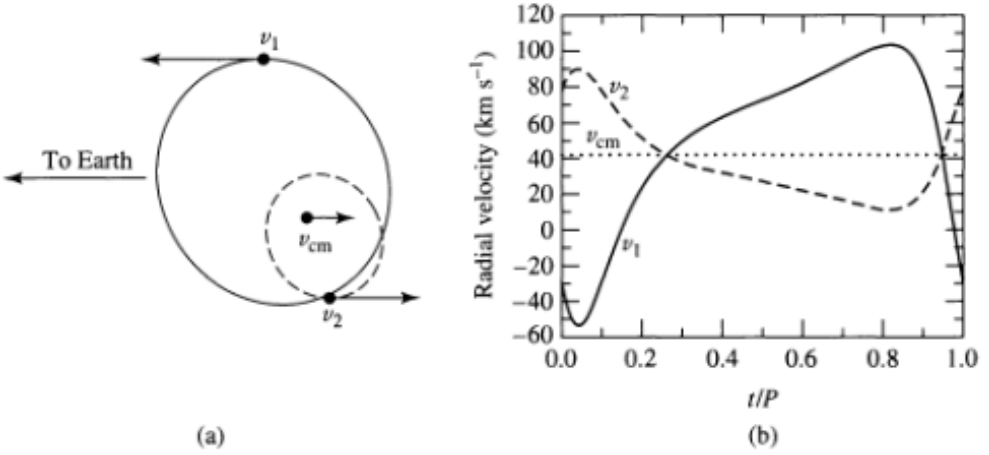


Binaries





Circular orbit



Ellipticall orbit
E=0.4

Binaries

Stellar properties measured with binaries

1. Mass
   i. From Visual Binaries
   ii. Complications with Visual Binary method
2. Radii, Surface brightness, Surface temperature
3. Mass functions from Spectroscopic Binaries