



Figure taken from [Guinan et al., ApJ 509, 21 \(1998\)](#)

Q: What is the orbital speed of each star around the center of mass?
You may pretend that the orbits are circular and equal in amplitude for this exercise.

Q: How long does the secondary eclipse at orbital phase 0.5 last?

Q: What is the size of each star? You may pretend that the two stars are equal in size.

The authors go through the rest of the procedure and end up with a pretty good measurement of the distance to this system: **45.7 +/- 1.6 kpc**. That's an uncertainty in distance of just about 3 percent!

However, the paper we've just discussed was published in 1998 and involves hot stars, for which stellar models may not be very accurate. More recent papers involving binary star systems in the LMC are: