Note added to the lecture of Fri Nov.5

I calculated the speed at which a star was moving away from us. The ratio lambda'/lambda was 1.000333. Using this value, I found that the speed of the star relative to us is -100 km/sec; the star is receding (redshift). This speed, however, is the radial component of the velocity. It is v*cos(theta) as it appeared in our Doppler shift equation. A measurement of lambda'/lambda can ONLY tell you what the component of its velocity is along the line of sight to the star (that is why we call this the radial component).

Later in the lecture I discussed binary systems, and I stressed that I assumed that you as the observer were in the plane of the orbits (we call that the orbital plane). I showed that you can then derive the orbital speeds of both stars, as well as their individual orbital radii, and that you can also find the mass of each star. I mentioned that if you as the observer are not in the orbital plane that the situation is more complicated because you ONLY measure the radial components of the velocity of each star. Only if you have some knowledge of the angle between the direction (line of sight) from you to the binary system and the orbital plane would you be able to get the actual orbital speeds of each star, the radii of their orbits, and their masses.

In some X-ray binaries you observe X-ray eclipses when the neutron star disappears behind the donor (in lectures I showed a slide of the eclipses observed in Her X-1). If that is the case, you know that you as the observer MUST be in the plane of the orbit or nearly so (why?).