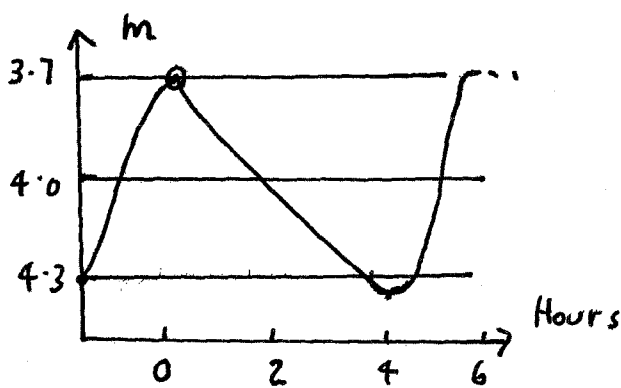


The "Cepheid Variable" Method of Distance Determination

Short-period variable stars. The variations are perfectly regular and are linked with the luminosity of the star.

Cepheids are giant stars and are common in the Galaxy. What makes them so important is the period-luminosity relationship. That is, a Cepheid with a period of (say) 5.3 days will have the same luminosity, in terms of the Sun, as any other Cepheid with a 5.3-day period. The longer the period, the greater the luminosity. Thus,

Eta Aquilae, in the Eagle, a Cepheid with a period of 7.2 days, is more powerful than Delta Cephei itself. Once the luminosities and apparent



magnitudes have been measured, the distances can be calculated.

Cepheids are intrinsic variables.

δ Cephei

Median light is the time mid-way between minimum and maximum values of brightness.

A Cepheid with a period which is ten times longer than another Cepheid is approximately two magnitudes brighter $\approx (2.512)^2$ at median light. The distances of the Magellanic Clouds were first measured around 1912, by Henrietta Leavitt, at Harvard University. DF 2017, Sept. 12