**Lecture Notes**

* Huge radiation output
* Surrounded by stellar winds (driven away by radiation pressure)
* Characteristic spectral line shape: P Cygni profile
* Eddington luminosity: the luminosity above which a star will blow away it’s outer layer in a wind
* Wolf-Rayet (WR) stars are hot and extremely luminous O type stars, show evidence of strong winds
  + Teff = 30000 – 10000 K
  + L = 3x104 – 106 Lsun
  + M = 50 Msun
* Such stars are losing mass at a rate of around 10-5 Msun per year.

**How to deduce mass loss?**

-From observations that allow calculation of density, ρ, and velocity, ν, of the stellar wind and by applying the mass continuity equation . (print page 5)

The most massive hot stars have a P Cygni profile and it has two main characteristics:

1. Blue shifted absorption dip: Caused by absorption of the star’s radiation by the stellar wind moving towards us, between us and the star
2. Red wing emissions: Caused by light scattered towards us by light particles in the wind and light that is directly emitted by the stellar wind

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B stars are blue-white stars. They are less hot, bright and massive than O stars. They also have signatures of winds.

B stars show photometric (i.e. light-curve) variability with periods of a few days, with an amplitude Δm = 0.05.

The most favoured explanation is that they are slowly pulsating in and out.

This is supported by radial velocity measurements showing a net Doppler shift in the line centre of certain emission lines.

* **The Formation of a stellar disk** 
  + B stars have strong radiation pressure but the material on the surface experiences a strong centrifugal force due to the star rotating
  + This centrifugal force helps drive out material outwards from equatorial regions of the star
  + This forms a disk
* Rotation is particularly pronounced in Be stars, we can find equatorial speeds of around 230 km/s.
* Be stars have T­eff of 10000 – 20000 K and emit in the UV (print page 15 diagram)