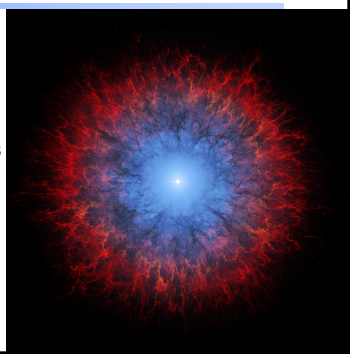
Velocity fields

- **Default is static, with thermal broadening**
- **Turbulence can be added**
  - makes line optical depths smaller, so lines escape more easily, continuum florescent excitation more important
- **Winds can also be computed**
- **Line transfer with "Large Velocity Gradient" (LVG) or "Sobolev approximation"**
  - 2 names for same thing

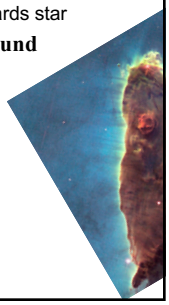
Wind solutions

- **Cloudy will solve for the wind structure**
- **Wind - ballistic supersonic outflows**
  - Positive wind velocity
- **dynamics_wind.in**



Wind solutions

- **~sonic flows from H II regions**
  - Negative velocity, since motion is towards star
- **D-critical flows, nearly at speed of sound**
- **dynamics_orion_flow.in**
- **Described here and here**



Project poster

- **One page landscape format PDF with results of the project**
- **One per group, to be posted on the web site**
- **Title, authors, abstract**
- **Introduction**
  - What problem were you trying to solve?
- **Methods and calculations**
- **Conclusions**
- **Due by August 18**

Project poster

- ***Non-compliance will be reported to Ted of School***
- ***He has your photo and he knows your address!***
- ***Ted: ted@qub.ac.uk***

Some closing thoughts

- **Cloudy – a big project, but lots of little projects along the way**
- **Quantitative spectroscopy - read the message in the starlight – what does the spectrum tells us?**
- **Like all fields, a steep learning curve, but the rewards will be great - be able to decipher the message**
  - Like medieval priests, an elevated position since only a few can read the sacred texts