

PHAS2521: Homework 2

The Interstellar Medium

To be handed in on the 7th December, or thereafter.

1. (a) What type of interstellar absorption lines are commonly found in the UV? How are they formed?
(b) Outline the basic approach used to determine gas element abundances from measurements of interstellar absorption lines.
2. (a) What are the observational clues for the existence and the nature of interstellar dust grains? What is the approximate size of an interstellar dust grain?
(b) Sketch the form of the extinction law from the near-IR to the UV region. Label the axes and any prominent features.
3. (a) Define what is meant by the term Hydrostatic Equilibrium for a gaseous body.
(b) What is meant by the term Jeans' Mass of an interstellar gas cloud, and state the typical value for a diffuse cloud? Why might this be different from the typical masses of stars; what does this imply about the process of cloud collapse?