

Mid Term Examination

Possible Topics for Discussion

- How do we measure stellar masses, radii and temperatures?
- Sketch the Hertzsprung-Russell diagram and give an overview of stellar evolution?
- How can we deduce the central temperature of the Sun from the virial theorem?
- What physical differences exist between upper and lower main sequence stars?
- Under what conditions does convection occur?
- Describe the two hydrogen burning sequences occurring in main sequence stars?
- Define opacity; what are its main contributing processes in stars?
- Calculate the mean molecular weight of a gas of arbitrary composition
- What is the physical basis of the Chandrasekhar mass limit for a star supported by electron degenerate pressure?
- What is the origin of the 'Gamov peak' in nuclear reactions
- What is meant by the term 'statistical equilibrium' in heavy element nucleosynthesis?
- What was the 'solar neutrino problem' and how was it resolved?
- How can we determine under which neutron-capture process the elements heavier than iron in the Sun were produced?
- Describe the various oscillation modes occurring in the Sun and under what conditions they occur? What has been learnt from helioseismology about the solar core?