Laurea Specialistica in Scienze Fisiche
a.a. 2004-2005
Astrofisica II
Titolare: Prof. S. N. Shore

Programma.

I. Astrophysical Fluid Mechanics

1. Distribution functions, the equations of motion, moments
2. Conservative form of the equations, stress tensor, fluxes
3. Shocks
4. Self-gravitating structures, hydrostatics, and limits: an application of the distribution function to evaporative envelopes and red giants
5. Viscous flows and the Reynolds number
6. Buoyancy instabilities: convection, Rayleigh-Taylor
7. Similarity methods
8. Outflows
9. Accretion: shear flows, disks
10. MHD, wave solutions, dynamo theory

II. Radiative Transfer and Diagnositics

1. Derivation of the transfer equation from rate equations
2. Moments of the transfer equation
3. Approach to thermal equilibrium: LTE vs. NLTE, scattering
4. Ionization equilibrium, H II regions
5. Radiative equilibrium and convective transport
6. Line formation, broadening mechanisms
7. Escape probaility methods, Monte Carlo modeling of transport
8. Radiating outflows and line formation

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