

## BASIC TOPICS IN ASTROPHYSICS

- Fundamental plasma parameters (mean free path, Debye length).
- Kinetic theory (distribution function, conservation of mass, momentum and energy).
- Euler and Navier-Stokes equations.
- Fluids as continua (conservation of mass, momentum and energy).
- Radiative force and work.
- Introduction to magnetohydrodynamics (assumptions, flux freezing, ideal magnetohydrodynamic equations).
- Radiative flux and specific intensity.
- Relation with photon distribution in thermal equilibrium.
- Radiative transfer equation (coefficients of emission, absorption, scattering, optical depth, thermal radiation as an example of the general theory, Einstein coefficients).
- Emission and absorption lines.
- Dust absorption.
- Retarded potentials.
- Electromagnetic field of an accelerating charge.
- Spectrum analysis.
- Polarization, Stokes parameters, propagation of polarized radiation.