A primer of Cosmology

- Relativistic hydrodynamics
- Hydrodynamics in a gravitational field
- Homogeneous and isotropic spaces
  - Killing vectors
  - Maximally Symmetric Spaces
- Cosmological Principle
- Robertson-Walker metric
- Energy-momentum tensor of the universe
- Red shift
  - Hubble constant
  - Deacceleration parameter
- Dynamical cosmology
  - Einstein-Friedmann equations
  - Time evolution of the cosmic scale factor
  - Cosmological constant
- Time evolution of the hot big-bang model
  - Radiation-dominated phase
  - Matter-dominated phase
- Cosmic Microwave Background (CMB) Radiation
  - CMB anisotropies
- Matter-energy density
  - Dark matter

Prerequisites

- General relativity
  - Tensor algebra in a curved space
  - Einstein’s equations for the gravitational field