

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
 - Deceleration 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