Lecture 1  Prelude: GR for the Common Man

Calvin and Hobbes’ mistake -- Our friend the metric -- Minkowski space and Newton’s Laws -- Time dilation and gravitational redshift -- Gravity as curved space

Lecture 2  Expanding Universes

The Hubble expansion -- Homogeneity and isotropy -- Friedmann-Lemaitre cosmologies -- The Robertson-Walker metric -- Cosmological redshift -- Why isn’t Brooklyn expanding?

Lecture 3  Cosmological Distances

Proper distance -- Three measures of distance: Co-Moving, Angular and Luminosity -- Generalized light cones -- The extended Hubble relation -- Observed luminosities of distant supernovae

Lecture 4  Spatially Non-Flat Cosmologies

Flat, open, closed -- The critical density -- Older notations -- The Universe I grew up in -- The Friedmann equation -- “Geometry is destiny”

Lecture 5  Inflation, Dark Energy and the Cosmological Constant

Einstein oversimplified -- Cosmological constant: the “leftist” view -- Dark energy: the “rightist” view -- De Sitter spaces -- Inflation in the early Universe -- What a lonely future awaits!

Presentations archived at: http://www.phenix.bnl.gov/WWW/publish/stankus/Intro_Cosmology/


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