Physics 6/6P The Character of Physical Law Fall 2005

Assignment 6

Special and General Relativity

Readings

Kogut ---------- Chapter 7.1-7.6: General Relativity

Ellis/Williams - Chapter 4.3: Flat Space Universes

Chapter 5.1-5.8: Curved Spacetimes

Appendix B4-B5: 4-Vectors

Problem Assignments

Everyone Problem Assignments(hand in at start of seminar)

Kogut 7.2 Gravitational Redshift

Ellis 4.21 Rindler universe

Ellis 5.9 Cylindrical-Polar metric

Ellis 5.18 Null cones

Ellis B21 Isolated electron cannot emit a photon

Ellis B22 Scalar product

Ellis B26 Transformation properties

Ellis B28 Invariance

Individual Problem Assignments

Ellis 4.19 Minkowski universe _____

Ellis 4.23 Past event horizon _____

Ellis 4.24 Milne universe _____

Ellis 4.27 Galactic redshift _____

Ellis 5.1 Curved surfaces _____

Ellis 5.5 Weightlessness _____

Ellis 5.7 Plane-Polar metric _____

Ellis 5.10 Static, spherically symmetric star _____

Ellis 5.19 Parallel transport on a cone _____

Ellis B23 Transform coordinates _____

Kogut 7.1 Lamp on rotating table _____

Subject Presentations (5 minutes)

Minkowski univers _____