

**CHAPTER 24**

**Reading:** Chapter 24, *Fundamental Concepts of General Relativity*.

**Problems**

Work four of the following ten problems. Pick problems that are appropriate for *you*—not too easy; not too hard; different from anything you have done in previous courses. Note: If you are really eager to learn general relativity, you may want to work more than four problems, but please indicate which ones you want to be graded.

Exercise 24.3 Geodesic equation in an arbitrary coordinate system

Exercise 24.4 Constant of geodesic motion in a spacetime with symmetry

Exercise 24.5 Action principle for geodesic motion

Exercise 24.7 Orders of magnitude of the radius of curvature

Exercise 24.8 Components of Riemann in an arbitrary basis

Exercise 24.9 Curvature of the surface of a sphere

Exercise 24.10 Geodesic deviation on a sphere

Exercise 24.12 Newtonian limit of general relativity

Exercise 24.13 Gauge transformations in linearized theory

Exercise 24.14 External field of a stationary, linearized source