

# Physics 130 General Relativity Seminar

## Assignment 8    March 17, 2011

### Part 1: Readings

**Cheng:** Chapter 8-Sections 8.1-8.2 Pages 141-158(Black Holes-Part 1)

**Amanda Peet GR Lectures** - Appropriate pages.

**Other sources** among references on website or books in my office.

### Part 2: Review Questions from Text

1. Cheng: 9-1, 9-3, 9-4, 9-5, 9-7

### Part 3: Everyone Problems

1. Cheng: 8-4 Kruskal coordinates
2. Cheng: 8-5 Circular orbits
3. Cheng: 8-6 No stable circular orbit for light
4. EP #51 - Null Geodesics in Strange Metric
5. EP #69 - Two Observers on a Kruskal Diagram

### Part 4: Extra Problems

1. EP #45 - In the Schwarzschild Geometry \_\_\_\_\_
2. EP #46 - Lightcones and Embedding \_\_\_\_\_
3. EP #47 - Time delay to Jupiter \_\_\_\_\_
4. EP #49 - Kruskal Coordinates \_\_\_\_\_
5. EP #50 - Perturbing Circular Orbits (numerical) \_\_\_\_\_
6. EP #53 - Do Not Touch Anything! \_\_\_\_\_
7. EP #54 - Escape from Black Hole by Ejecting Mass \_\_\_\_\_
8. EP #85 - Clocks in Schwarzschild Spacetime \_\_\_\_\_
9. EP #86 - Particle Motion in Schwarzschild Spacetime \_\_\_\_\_