

Physics 136c, Week 5: From Special to General Relativity

(Dated: May 3, 2012; due May 9, 2012)

The maximum number of points you can get for this assignment is **50**, although you could choose to do problems that worth more than 50 points.

This week we covered Chapter 23 of Blandford and Thorne (BT).

1. **Invariance of a Null Interval** Exercise 23.2 of BT. [15 Points]
2. **Gradient and Connection Coefficients** Exercise 23.6 and 23.7 of BT [25 Points]
3. **Connection Coefficients for Spherical Polar Coordinates** Exercise 23.9 of BT [10 Points]
4. **Stress-Energy Tensor for a Viscous Fluid with Diffusive Heat Conduction** Exercise 23.13 of BT [20 Points]
5. **Proper Reference Frame** Exercise 23.14 of BT [15 Points]