GR Book – Control Systems Chapter Outline

1. Introduction
   1. What is feedback control
   2. How is it used in interferometry
2. Principles of Feedback Control
   1. The Error-Signal
   2. Feedback Stability
3. Noise and Measures of success
   1. Noise in feedback loops
   2. Objectives of feedback design
4. Examples in GW Detectors
   1. Laser Frequency Stabilization
   2. Length Sensing and Control
   3. Alignment Sensing and Control
   4. Active Seismic Isolation

Seciton 2a will depend somewhat on chapter 9 (about resonant cavities), so maybe the order should be changed. Also, chapter 9 is titled “cavity optics…”, but I assume that it will introduce the concepts (and relavant equations) behind resonant cavities before talking about the optics. Will the generation of PDH signals appear in that chapter, or in mine?

Section 3 will give a few examples of control loops used in each of these sub-systems, but will leave the details to the relevant chapters of Volume 2.