

Quantum Gravity Spring 2015

Problem Set 6

Due: Tuesday, April 21.

Reading: Read the lecture notes through the end of note 20, and sections 4.8-4.9 of Kiritsis *String Theory in a Nutshell*.

1. Using the results of Kiritsis section 4.9, calculate the path integral of a 2d CFT on S^2 of radius R . Express the answer in terms of c and R .

2. Lecture note 18, exercise “positivity of classical relative entropy.”

Note: Exercises were not included in the first version of note 18 posted to the website, so you might need to download the latest version.

3. Lecture note 18, exercise “mutual information practice.”

4. Lecture note 18, exercise “purification and the triangle inequality.”

5. Using figure 20.10 in the notes, confirm that strong subadditivity implies eqn (20.17).