Quantum Gravity Spring 2015
Problem Set 2

Due: Thursday, Feb 12.

Reading: Read lecture notes 4,5,6.

Optional reading: Start reading "The Dynamics of General Relativity" by Arnowitt, Deser and Misner. This classic 1962 paper, which introduced the so-called "ADM Hamiltonian" for GR, is available online at http://arxiv.org/abs/gr-qc/0405109. See also appendix E.2 of Wald, which reviews the same topic but with less insight.

1. Lecture note 5, exercise "Entanglement warm-up"
2. Lecture note 5, exercise "Thermofield double"
3. Lecture note 6, exercises "RN Free energy" and "RN specific heat"
4. Lecture note 6, exercise "Schwarzschild action"
5. (*optional) Lecture note 5, exercise "State on an interval in 2d CFT"
6. (*optional) Lecture note 4, exercise "Finite-temperature correlators in 2d CFT"
7. (*very optional) Lecture note 6, exercise "Euclidean methods for the BTZ black hole"