Some Topic Suggestions

Lists of references below are intended as entry points to the literature, and not as complete citations of all good work on the subject. For each paper you should of course always also read all papers which cite it, as well as all of the papers to which it refers. The order below is not meaningful, though I’ve tried to group related topics together.

For most of the papers listed below, a relatively complete citation list can be found using Spires: http://www.slac.stanford.edu/spires/hep/.

1. holographic RG flows and an ‘a-theorem’ [d’Hoker-Freedman review, hep-th/0201253, §9-10]
2. string duals of gauge theories with matter in the fundamental [Karch-Katz, hep-th/0205236; Sakai-Sugimoto, hep-th/0412141, hep-th/0507073] and thermal aspects [see refs in review by Erdmenger et al 0711.4467]
6. entanglement entropy from the gravity dual [Ryu-Takayanagi, hep-th/0603001, hep-th/0605073 and citations thereof; see in particular Fursaev, hep-th/0606184]
7. 2d strong-coupling transport in a magnetic field [Hartnoll, Kovtun et al, 0704.1160, 0706.3215]; constraints from EM duality in the bulk [Witten, hep-th/0307041, Kovtun et al, hep-th/0701036]
8. holographic models of superfluidity and superconductivity [HHH, 0803.3295, 0810.1563, Kovtun et al 0809.4870, Shieh et al 0809.4494]

11. attempts to see a fermi surface in the gravity dual [Sung-Sik Lee 0809.3402; Rozali et al 0708.1322; Karch-Son-Starinets, Parnachev-Kulaxizi...]


15. cusp anomalous dimension from string theory [Kruczenski, hep-th/0210115]


17. \(c \leq 1\) strings and matrix models, an example of holography [Kiritsis, chapter 15, review by Yu Nakayama, hep-th/0402009]


19. holography for large-\(N\) vector models? [Klebanov-Polyakov, hep-th/0210114]


21. matrix models of black hole information consumption [Festuccia-Liu, hep-th/0611098; Iizuka-Polchinski et al, 0801.3657,0808.0530]


23. microscopic accounting of Bekenstein-Hawking entropy for BPS black holes [Strominger-Vafa, hep-th/9601029 et cit.]
24. Birkhoff/no-hair, quasinormal modes, and thermalization [Horowitz-Hubeny, hep-th/9909056]
   quasinormal modes and hydrodynamic modes [Kovtun-Starinets, hep-th/0506184]

25. computation of hydrodynamic green functions [Policastro-Son-Starinets, hep-th/0205052, 0210220]

26. anything else we don’t get to in lecture that’s on the syllabus.