PLAN

Plan of the last few classes

- May 12: Prime number theorem; Ax–Grothendieck theorem
- May 19: Ax–Grothendieck theorem (cont'd); Dirichlet theorem
- May 26: Dirichlet theorem (cont'd); Conway's rivers, lakes, wells, and weirs.
- June 2: Borel summation, resurgence analysis, Stokes phenomenon, etc.
- June 9: Dilogarithm, hyperbolic 3-manifolds, quantum dilogarithm, wall-crossing formula of stability conditions, etc.
- **June 11 (9am-11am): Final exam**

Plan of the final exam

- Since our final exam will be held quite early in the exam period, the material we discuss on the last two classes (June 2 and 9) will *not* be tested.
- There will be 5 problems in the final exam, one from each of the following topics: (1) measure theory and ergodic theory, (2) topology (fundamental groups), (3) algebra (rings and fields), (4) complex analysis and modular forms, (5) analytic number theory.
- Each problem is worth 25 points; and your score will be the sum of the top four: For instance, suppose you scored

  $$25, 25, 20, 20, 15$$

  then your final score would be $25 + 25 + 20 + 20 = 90$.
- Each problem will (likely to) consist of multiple sub-problems; the 25 points will be distributed so that 20 points are more or less standard, while the remaining 5 points might be slightly more challenging (but certainly doable).
- A set of practice problems will be released once the problems are finalized, which I will try to finish as soon as possible (hopefully around *May 20-25*). I will indicate on the practice problems the relative difficulty comparing with the actual exam.
- Because of the nature of this course, we will *not* be testing the technical details. Fully understand the concepts and proofs we discussed in class would be enough. It should be clearer once the practice problems are ready. We will have two classes in June (June 2, June 9) during which we can discuss any exam-related problems you may have.