

This whole set is made of reading assignments.

1. First, read §6.2.a–b of the *Superspace* book ([local online copy](#)) about the gauge fixing and the ghosts in supersymmetric Yang–Mills theories.

§6.2.a is a warm-up exercise, it discusses the gauge fixing and the ghosts in the ordinary Yang–Mills but it sets up the notations and the framework for discussing the superfield discussion in §6.2.b.

2. Second, read the 1982 paper by Edward Witten, *Constraints On Supersymmetry Breaking*, (published in *Nuclear Physics B* **202** (1982), pages 252–316, [local online copy](#)) about the Witten index and other constraints on spontaneous SUSY breaking (perturbative or nonperturbative).

This is a long and hard paper, so please read carefully. Try to go through the first half of the paper (sections 1 through 6) this week, you can read the rest of the paper next week. Also, at first reading, skim through section 3 and focus on the more important sections 1–2 and 4–6. Once you understand those section, go back to section 3.