P661 Homework # 9 11/04/04

Due Tuesday 11/16/04

Finish reading Chapter 10. Read Chapter 11.

Part 1

(1) Count the number of massless modes in both heterotic string models.

Part 2:

(2) We spent little time on the heterotic model. We shall not come back to it. You may want to wok out some details in Chapter 11.

(3) Write down the partition function for the $E_8 \times E_8$ model. Show that the partition function is modular invariant without assuming it is actually zero.

(4) Work out the bosonization of both the (b, c) and the (β, γ) ghosts; that is, show that the OPE of the bosonized form is correct.