

Homework 4: Due at class on Oct 14

1 Derivations

1.1 Commutation relations in free boson

Derive the commutation relations (4.7) and (4.8) from (4.6).

1.2 Hamiltonian in free boson

Derive the Hamiltonian (4.10) from (4.9).

1.3 Action of free fermion

Derive (4.33) from (4.30).

1.4 TT OPE in free fermion

Compute TT OPE (4.45) in the free fermion.