

**Homework IV****Suggested reading:**

1. Peskin sections 16.5, 17.1 and 17.2.
2. Pokorski section 8.1.

**due date November 5th**

1. Consider an arbitrary gauge theory with  $n_f$  fermions in the fundamental representation of the group. Evaluate the one-loop vacuum polarization diagrams and obtain the corresponding  $Z_3$ .
2. Using the results for  $Z_{1,2,3}$  obtain the  $\beta$  function of the model in the previous item.