

FY3403 Particle physics
Problemset 10 fall 2025

PAGE 1 OF 1

NTNU



Institutt for
fysikk

Background material: mainly Griffiths chapter 9 and chapter 10.

Problem 1. Decay rate for Z^0

a) Calculate the decay rate for $Z^0 \rightarrow f + \bar{f}$ where f is any quark or lepton. You may assume that the mass of f can be neglected compared to m_Z .

b) Assume that these are the dominant decay modes and find a numerical value for the branching ratio for each type of lepton.

Problem 2. Gauge theories

Problem 10.11 in Griffiths book.