Quantum Field Theory I: PHYS 721 (Autumn 2020)
Quick quiz—Thursday, October 8.

Instructions

These quick quizzes are low-stakes assessment tools to help cement your understanding of our material. They will help you remember the key facts and can serve as a study guide to help you focus on material you are less familiar with. These quizzes do not contribute to your grade and are for your own use.

1. **Without looking at your notes or the textbook, and without consulting with your physically-distanced neighbour**, write your answer to each question in the **first column**.
2. After our reivew and class discussion, answer each question and write your answers to each question in the **second column**. You should complete the second column, but do not add anything to your first column.

There are four questions.

Question 1

Write down the relations obeyed by the annihilation and creation operators for a free fermionic field.

Question 2

Why are four-fermion operators $(\overline{\psi}\psi)^2$ nonrenormalisable? And why does that matter, if at all?

Question 3

What are the symmetries of the Dirac Lagrangian?

Question 4

What's the connection between spin and statistics?