

Quantum Field Theory I: PHYS 721 (Autumn 2020)
Quick quiz—Thursday, September 17.

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 review 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 fully-connected Feynman diagrams for

$$\langle \Omega | T \{ \phi(x_1) \phi(x_2) \phi(x_3) \phi(x_4) \} | \Omega \rangle$$

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Question 2

Describe the differences between the four propagators.

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Question 3

Explain why we use the interaction picture (this explanation should include a definition of the interaction picture).

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Question 4

What is the role of the scattering matrix $U(\infty, -\infty)$?

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