

Quantum Field Theory I: PHYS 721 (Autumn 2020)
Quick quiz—Thursday, September 24.

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

Draw the connected diagrams that contribute to two-to-two scattering in real scalar field theory with ϕ^4 interactions.

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Question 2

Describe what a scattering cross-section represents.

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Question 3

How does the LSZ reduction formula allow us to understand theories like QCD (quantum chromodynamics), in which physical particles like protons do not correspond to any fundamental field in the theory (which are quarks and gluons)?



Question 4

What have you found most challenging about this part of the course, and why? [**Reading my handwriting is not an acceptable answer.**]

