PHY 5667 : Quantum Field Theory A, Fall 2019

August 27^{th}, 2019

Assignment # 1

(due Thursday September 5^{th}, 2019)

Since we are not meeting during the first week of class, you can take advantage of it by reviewing preliminary material on Lorentz transformations and Lorentz invariance that I will mostly assume as being part of your background. More specifically, I would like you to read through Chapters 1 and 2 of Srednicki's book.

Chapter 1 is a remarkably nice introduction to *relativistic quantum field theory*, where the need to combine *quantum mechanics* and *relativity* is clearly explained. Read it carefully and make sure you understand the point of the discussion. Take the time to review those ideas and concepts that may sound less familiar.

Chapter 2 is about Lorentz transformations and Lorentz invariance. It is assumed that you are familiar with the formalism of *4-vectors*, since it has been used in some of the core classes that you have taken. Chapters 1 and 2 will help reviewing it and adding the information that you may be missing. In order to test and consolidate your understanding, please go through the following series of problems:

1. Problems 2.1-2.7 of Srednicki's book: these problems only ask you to verify certain equations used in Chapter 2.

2. Problem 2.8 of Srednicki's book.

3. Problem 2.9 of Srednicki's book.