PHYS 634: Quantum Field Theory “0”  
Fall 2016

Syllabus

This course is designed as the first quarter of a three-quarter sequence on Quantum Field Theory. The first quarter focuses on scalar quantum field theory. A rough outline of topics includes:

1. Canonical Quantization of Scalar Fields
2. LSZ Reduction
3. Path Integrals in Field Theory
4. Amplitudes, Feynman Rules, Cross Sections, Decay Rates
5. Applications

I'll be more precise about exactly what we are covering (sections in Srednicki) and where we are headed as the course progresses.

Objectives

The objectives of the course is to gain sufficient grasp of the syllabus material to calculate basic processes in scalar field theory. This involves gaining a detailed understanding of field theory quantization, the path integral approach to quantum field theory, the Feynman diagrammatic expansion, and how to calculate cross sections and decay rates. The course expectations are that you successfully work through all of the problems of the homework assignments.

Text:  
Srednicki: Quantum Field Theory  
http://www.physics.ucsb.edu/~mark/qft.html

Useful References:  
Peskin & Schroeder: Intro to QFT  
Schwartz: QFT and the SM  
Weinberg: Quantum Theory of Fields

Instructor:  
Prof. Graham Kribs

Office:  
470 Willamette Hall

Office Hours:  
Generally, anytime my door is open. For questions about assignment problems, I’ll schedule a block of time each week that works for most students at the beginning of the course.

E-mail:  
kribs@uoregon.edu  
(This is the best way to reach me)

Class Website:  
http://wingate.uoregon.edu/phy634  
(Announcements, homework, solutions, syllabus, etc.)
Assignments: Homework assignments will be assigned periodically and due roughly one week later. There will be one homework assignment due either the last week of classes and/or the exam week.

Grade:
85% Assignments, equally weighted
15% In-Class Mini-Lecture

Grading Policy:
Pass (A- and above): All or virtually all problems of all homework assignments done correctly and turned in on-time. In-class mini-lecture is clear, well-organized, understandable, and student questions are adequately addressed.
Pass (B- and above): A solid attempt on virtually all problems of all homework sets turned in on-time. In-class mini-lecture is clear, organized, understandable but with some issues, and student questions are partially addressed.
Fail (C+ and below): Habitually late homework, > 1 missed homework sets, several missed or incorrect problems on several problem sets. In-class mini-lecture is unclear, not well organized, not understandable by other students, and most student questions cannot be addressed.

Class Cancellation:
In the unlikely event that I have to cancel class at the last minute (bad weather or otherwise), I will attempt to email everyone.

Late Assignments:
General You must do all of the assignments, and turn them in on-time to get a passing grade in the course.
24 hour rule Assignments will be accepted up to 24 hours late, but with a late penalty. Assignments will not be accepted nor graded more than 24 hours after the deadline.
Late penalty The late penalty is an overall reduction of grade by “1/3” times the number of late assignments minus 1. (B+ becomes B, after two late assignments; A– becomes B after three late assignments, etc.). However, it is your responsibility to find the grader and be sure he personally gets it within this timeframe.
One late penalty waiver Inevitably some students need an extra day to finish one assignment for some unforeseen reason. To be fair to everyone, all students get one waiver. Use your waiver wisely.

Comments on Assignment Grading

Please write clearly, legibly, and organize your solution. Don’t be afraid to waste paper to ensure your solution can be clearly followed, step-by-step.

It is highly preferred that you use one-side of the paper, and start new problems and/or parts of problems on new pages.