Quantum Field Theory II

Times:
Lectures:
Monday 8:45 - 10:15
Wednesday 8:45 - 10:15

Exercises:
Monday 10:15 - 11:45

Group A: Seminar Raum 2
Group B: Hörsaal III

Please distribute yourselves evenly over the two groups, corrections might be made.

Course homepage:
There is a homepage. It may be found under: www.desy.de/~boels/

Contents should include this page, all exercises so far, rough idea of course contents so far, etc.

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Exercise session instructor: Martin Sprenger

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Book(s):
There is a book. The course will be mostly based on chapters Parts II and III from

Peskin & Schroeder, “An Introduction to Quantum Field Theory”, Westview Press, 1995

This deals with the the application of Quantum Field Theory to modern particle physics, based on the path integral formalism. I want to stress I consider the content of the lectures and the exercises as the true basis of the exam.

There are many other books on quantum field theory. Some are good, others are better left alone. A good introductory, but slightly light book is Lewis Ryder’s “Quantum Field Theory”. It might make for good secondary reading.

A book I've been meaning to dig into deeper is Anthony Zee's "Quantum Field Theory in an Nutshell". However, I have no personal experience with it yet due to lack of time. In the same category of things-i-d-love-to-read-better: A set of lecture notes by David Tong, http://www.damtp.cam.ac.uk/user/tong/qft.html as well as lecture notes of a course given by Richard Borcherds (of monstrous moonshine fame), http://arxiv.org/pdf/math-ph/0204014.pdf The latter might be well-suited to the more mathematically inclined.

The most far-out, but still useful book on Quantum Field Theory I know of is Warren Siegel's "Fields", available on-line at http://insti.physics.sunysb.edu/~siegel/errata.html. This book is really different and contains many non-standard techniques. It's free, electronic and therefore, as the author points out explicitly on his website, can't be eaten.

A set of books I'd advice you to stay away from for a first course is Weinberg's "The Quantum Theory of Fields". These are way beyond what we'll need.

Any further suggestions are welcome!

Exercises:
There will be exercises, both from the Peskin and Schroeder book and handouts. The exercises will be listed on the homepage.

Bonus:
You can earn a bonus. This can lead up to a 0.3 point increase on your exam. The bonus can be earned by handing in solutions to the exercises three times during the course. Your solutions will be graded. A positive grade (roughly > 50% correct over all exercises) earns the bonus. The bonus will only count for an exam in the 2013-2014 academic year.

Note: you are very welcome to work on the exercises in groups. Hand-ins however are only for *one person*! You need to demonstrate that *you* understand the problem as well as its solution. Too extensive similarities will not be tolerated.

Exam:
There will be an oral exam.