



PH396 January 3:0

Quantum Field Theory II

Instructor

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Teaching Assistant

Email:

Department: CHEP

Course Time: MWF 9-10

Lecture venue: LH3

Detailed Course Page:

Announcements

Brief description of the course

Provides tools for research in elementary particle physics and field theory.

Prerequisites

QM-I, II and III, QFT-I

Syllabus

Abelian gauge theories. QED processes and symmetries. Loop diagrams and 1

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loop

renormalization. Lamb shift and anomalous magnetic moments. No

abelian gauge theories.

Faddeev

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Popov ghosts. BRST quantization. QCD beta function, asymptotic freedom. Spinor

helicity formalism for gauge theories. Composite operators, operator product expansion.

Anomalies. Lattice gauge theory, strong coupling expansion. Confinement and chiral symmetry breaking

Course outcomes

End product is students who are ready to carry out research in particle physics and field theory

Grading policy

20 % HW, 30% mid-term, 50% final

Assignments

Several homework problem sets are given for students to become strong in calculations.

Resources

Itzykson and Zuber, Quantum Field Theory

Pokorski: Gauge field theory

Ramond: Field Theory Primer