

# QFT I - Plan of lectures

Prof. Dirk Kreimer

October 14, 2013

- Oct 16: Overview
- Oct 21: Fock space
- Oct 23: The propagator
- Oct 28: cont'd
- Oct 30: Ex 1
- Nov 04: Interacting field th.
- Nov 06: cont'd
- Nov 11: cont'd
- Nov 13: Ex 2
- Nov 18: Path integral combinatorics
- Nov 20: cont'd
- Nov 25: Feynman rules scalar fields
- Nov 27: Ex 3
- Dec 02: A master integral - 1-loop
- Dec 04: 1-loop renormalization
- Dec 09: Dirac equation and Clifford algebras
- Dec 11: Ex 4
- Dec 16: Yukawa theory
- Dec 18: basic QED
- Jan 06: recap
- Jan 08: Ex 5
- Jan 13: 1-loop QED
- Jan 15: A master integral 2-loop
- Jan 20: vacuum polarisation QED 2-loops

- Jan 22: Ex 6
- Jan 27: Ward identity
- Jan 29: Ward-Takahasi identity
- Feb 03: Renormalisation
- Feb 05: Ex 7.
- Feb 10: cont'd
- Feb 12: Outlook: S-matrix, cross-sections, gauge theory

Literature:

*Quantum Field Theory for Mathematicians.* R. Ticciati (Cambridge UP)

*Quantum Field Theory - A Tourist Guide for Mathematicians.* G.B. Folland (AMS)

*Mathematical Aspects of Quantum Field Theory.* E. de Faria, W. de Melo (Cambridge UP)

*Quantum Field Theory.* C. Itzykson, J.-B. Zuber (Dover)

*An Interpretive Introduction to Quantum Field Theory.* P. Teller (Princeton UP).