

Basic Quantum Field Theory

Summary of content

This course will present an introduction to fundamental concepts in quantum field theory using scalar fields. Topics covered will include Hamiltonian and Lagrangian field theory; canonical and path integral quantization; cross sections, decay rates, and the S matrix; perturbation theory and Feynman diagrams; loop integrals; renormalization; and symmetries. The course will roughly follow the first part of the text *Quantum Field Theory* by Mark Srednicki, but additional resources may be provided. The topics covered may change slightly depending on time constraints.

Contact hours

Weekly, 1.5 lecture hours plus office hours by appointment.

Evaluation

Weekly homework assignments plus a take-home final examination.

Dates of course

6 Sept - 17 Dec 2012 (inclusive of examination period).