
QFT 1 – Useful things to know

Lectures: Jan Pawłowski

J.Pawłowski@thphys.uni-heidelberg.de

Tutorials: Felipe Attanasio

F.Attanasio@thphys.uni-heidelberg.de

Institut für Theoretische Physik, Uni Heidelberg

- What is a Lagrangian and what is the Hamiltonian? How are they related?
- What are the canonical momenta?
- How are scalar/spinor/gauge fields quantised?
- What are the quantisation relations for scalar/spinor fields and ladder operators?
- What is a symmetry of a Lagrangian?
- What is the statement of the Noether theorem?
- How to calculate the Noether current and charge?
- What is the Klein-Gordon equations?
- What is the Dirac equation?
- What is the Clifford algebra?
- What is time ordering and normal ordering?
- What is the time evolution operator?
- What is the statement of the Wick theorem?
- What is a cross section?
- How to calculate a scattering amplitude?
- What is a Feynman diagram?
- What is the LSZ formalism
- What are the Feynman rules for a Yukawa theory and for QED?
- What is a gauge symmetry?
- How do fields transform under a gauge symmetry?
- How do ϕ_0 , Z , ϕ scale under μ , Λ ?