Basics of lattice field theory (Margarita, Simon, Christof)

Goal: Understand Wilson's formulation of lattice QCD

- Field content (link variables, Grassmann)
- Grassmann integrals
- Haar measure
- Gauge invariance, no need to gauge fix
- Euclidean n-point functions and what to do with them
- How to write Euclidean n-point functions as path integrals (including temperature and finite density)
- Hamiltonian formulation
- Interesting observables (Wilson & Polyakov loops, hadron interpolators, glueballs)
- Confinement + area law, demonstration on strong coupling
- How to compute hadron masses
- How to obtain continuum results
- Wilson RG
- Why do we need a computer for QCD?

Time budget: about 8-10 hours

Test presentations:

   Christof: Euclidean n-point functions and their path integral representation in 3-d QM
   Simon: Lattice fermions
   Margarita: Strong coupling expansion