

Gauge Theory towards the Standard Model

This will be a talk on Gauge Theory happening early coming Spring semester. This talk might be divided into two parts.

For now, this page solely exists to set this on stone for the extra commitment. By that time, I should be able to go through the following:

- Motivation, Electromagnetism and General Relativity
- Groups, Fibre Bundles and Hopf Fibration as an Example
- Field Theories and the Lagrangian of a Complex Scalar Field
- Gauge Symmetries vs Noetherian Symmetries
- Local Gauge Symmetries and the Gauge Principle
- Minimal Coupling Prescription, The Gauge Potential and Electromagnetism as a $SO(2)$ Gauge Theory (or a $U(1)$ Gauge Theory)
- Interpreting the Gauge Potential as a Connection on the Associated Vector Bundle of the Gauge Group
- Interpreting the Field Strength as the Curvature
- Yang-Mills Theory as an example of a Non-Abelian Gauge Theory