QUANTUM ELECTRODYNAMICS

- Conventions, notations, ...
- Feynman diagrams, **functional** integrals, **canonical** transformations.
- The S-matrix.
- Spin 1 **massive** and **massless** fields.
- **Unitarity** in Field Theory, the *largest time equation*, the *cutting equation*.
- The **QED** Lagrangian.
- **Ward** identities, **non-linear gauge** in **QED**.
- Loop integrals.
- **Non-renormalizable** theories.
- Dimensional regularization.
- **Lamb** shift.
- **One-loop** renormalization in **QED**.
- **Order-by-order** renormalization in **QED**, the two loops.
- The running of α_{QED}.
- **Asymptotic behavior** in Field Theory.
- **Callan-Symanzyk** equation and the **renormalization group**.
- The $SU(2)$ model.

- The **Higgs** mechanism.
- The **standard model** $SU(2) \otimes U(1)$.
- **One-loop** renormalization in $SU(2) \otimes U(1)$.
- The ρ-parameter.