Lecture 4

Relation between QFT and Poincare group

- Fields and particles

Poincare

- Translations
- Lorentz transformations
  - Boosts
  - Rotations

Translations

- Abelian so all irreps 1-d: $e^{-iPx} \rightarrow e^{-ipx}$

Rotations

- Finite dimensional unitary irreps

Lorentz

- Finite dimensional non-unitary irreps
- Infinite dimensional unitary irreps

Poincare

- Infinite dimensional unitary irreps
  - carried by basis of particle (helicity) states
    - $| p \lambda >$