

Particle Physics – PHY680
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Prerequisites : Quantum Field Theory-I
Group Theory

Course Contents:

- I. What is Particle Physics?
- II. Basic development and its limitations.
- III. Paving the path towards the Standard Model (SM).
 - (a) Historical development of SM.
 - (b) SM as a gauge theory.
 - (c) Spontaneous symmetry breaking and mass generation.
 - (d) Phenomenological exploration of the SM.
 - (e) Parton model.
 - (f) Higher order correction in SM.
- IV. Shortcoming of SM – Beyond Standard Model.
- V. Grand Unification.

References:

- I. **Gauge Theory of Elementary Particle physics – Cheng and Li.**
- II. **Quarks and Leptons - Halzen and Martin**
- III. **Gauge Theories in Particle Physics- I + II: Aitchison and Hey**
- IV. **Classical Theory of Gauge Fields – Rubakov and Wilson**