Introduction to Physics Beyond the Standard Model

Luca Silvestrini (INFN, Rome)
Luca.Silvestrini@roma1.infn.it

First part – Introduction

- Open problems of the Standard Model and motivations for New Physics
- Accidental symmetries of the Standard Model and their phenomenological relevance
- The Standard Model as an effective theory: The Standard Model Effective Theory (SMEFT)
- Constraints on the SMEFT from experimental data and indirect searches for New Physics
- Model-independent direct searches for New Physics and machine learning

Second part – Selected topics

- Selected topics in model building, to be chosen with the students including for example:
  - grand unification
  - Supersymmetry
  - TeV-scale extra dimensions
  - composite Higgs model
  - multi-Higgs models
  - models of flavour
  - …