

# Beyond the Standard Model: experimental aspects

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## Introduction

### From collisions to physics

- LHC
- Detectors and particle reconstruction
- Simulation
- Cross-section measurements (\*)

### Statistics for new physics searches

- Probability density functions
- Maximum likelihood estimators
- Modelling the data
- Hypothesis testing
  - o Discovery
  - o Exclusion

### The Higgs boson: a portal to beyond the Standard Model physics

- Introduction
- Discovery
- Property measurements
- Coupling measurements and constraints on BSM models
- Higgs boson and dark matter (\*)

### Searches for supersymmetric particles

- Phenomenology
- Squarks and gluinos
- A detailed example: OL analysis
- Higgs sector
- Gauginos and sleptons (\*)
- Other searches: RPV SUSY, Long live particles (\*)

### Selected topics beyond the Standard Model physics

- Heavy flavour physics: CKM, rare decays and Lepton Flavour Universality tests
- Vector like quarks searches
- Heavy gauge boson searches

*(\*) only if time permits*