UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Monte Carlo methods for collider physics

86R-XXXVI-MCMCP

Aims

Contents

1. General introduction: basic theoretical and experimental concepts of hadronic collider physics;
2. Asymptotic freedom, QCD, jets. Infrared and collinear safe observables.
3. Theory of hadronic collisions. Perturbative computation at leading, next-to-leading and next-to-next-to-leading order. Overview of existing tools for automatic computation of physical processes.

4. Simulation of hadronic collisions with shower Monte Carlos. Theoretical basics: leading-collinear contributions; soft contributions (Sudakov form factors). Summary of available codes.
5. Interface between tree leval matrix elements and Parton Shower (CKKW matching).
6. NLO calculations and shower Monte Carlo: MC@NLO and POWHEG.

Detailed program

Prerequisites

Teaching form

2 CFU, 16-20 hours, language: English.

Textbook and teaching resource

Semester

February 1st h.10:00-13:00

February 2nd h. 10:00-13:00

February 3rd h. 10:00-13:00

February 4th h. 14:30-17:30

February 5th h. 10:00-13:00

Assessment method

Oral colloquium

Office hours