



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Introduction to Soft-Collinear Effective Theory

2122-86R-IntroSCETh

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#### Title

Introduction to Soft-Collinear Effective Theory

#### Teacher(s)

Dott. Matthias Neubert

#### Language

English

#### Short description

##### Short Description:

- I. Motivation
- II. Effective field theory in a nutshell:
- III. Heavy-quark effective theory (HQET):
- IV. Soft-collinear effective theory (SCET):
- V. Properties of the SCET Lagrangian:

- VI. Matching of the 2-jet current:
- VII. The Sudakov form factor in SCET
- VIII. Renormalization-group evolution equations
- IX. Decoupling of ultra-soft gluons
- X. Applications of SCET
- XI. Collinear anomaly
- XII. Drell-Yan production at small transverse momentum

### **Prerequisites**

Introductory course on Quantum Field Theory at the level of Peskin & Schroeder

### **Textbook and teaching resource**

T, Becher, A. Broggio and A. Ferroglia: Introduction to SCET (arXiv:1803.04310)

Handwritten lectures notes (in color) will be distributed during the course.

### **CFU / Hours**

CFU / 20 hours (8 two-hour lectures plus 2 two-hour tutorials)

### **Teaching period**

May 16 until June 1, four days per week (two days in the third week)

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