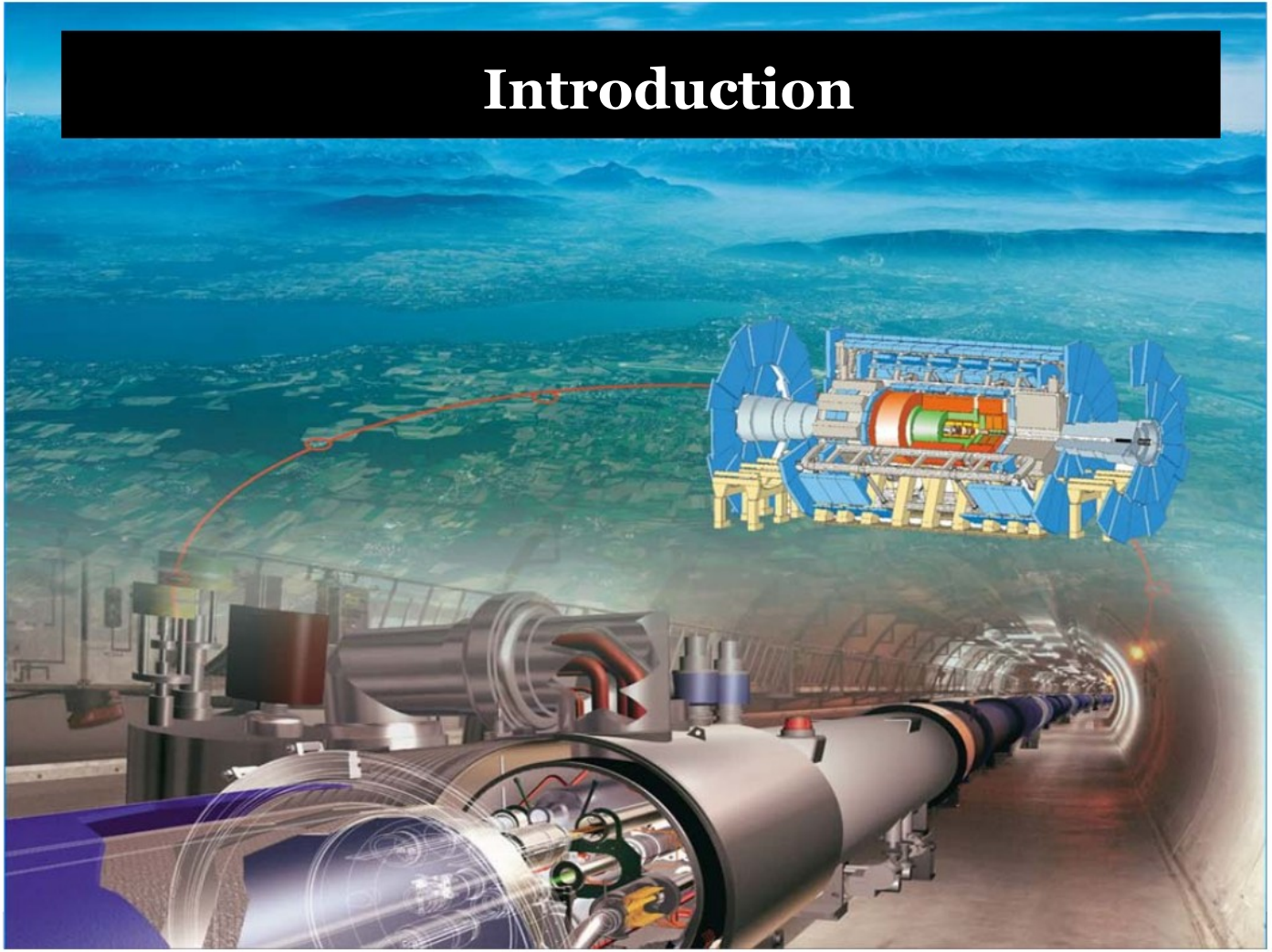
Testing the Standard Model of Elementary Particle Physics II

Introduction

23th April 2020

Introduction



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Curriculum

1. Standard Model of Particle Physics
    1.1 Field Theories of Elementary Particle Physics
    1.2 Gauge Theories and Interactions
    1.3 Fundamental Forces and their Unification
    1.4 Origin of Particle Masses (i.e. the Higgs mechanism)
    1.5 Theory meets Experiment (using Feynman Diagrams)
2. Recent experimental Tests on the Standard Model of Particle Physics
    2.1 Precision Measurements of the Electroweak Interaction
    2.2 Physics at the Large Hadron Collider
    2.3 The Higgs Boson (Searches and Measurements)
    2.4 Ongoing Searches for Beyond the Standard Model Physics
    2.5 B-Hadron Decays and CP Violation
    2.6 Neutrino Masses and Oscillation

Curriculum

3. Extension of the Standard Model of Particle Physics
    - 3.1 Open Questions
    - 3.2 Great Unification
    - 3.3 Supersymmetry
    - 3.4 Dark Matter

Literature

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- Ch. Berger: **Elementarteilchenphysik**, Springer, 2002.
- P. Schmüser: **Feynmangraphen und Eichtheorien für Experimentalphysiker**, Springer, 2nd edition, 1995.
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- Ian Brock, Thomas Schörner-Sadenius: **Physics at the Terascale**, WILEY-VCH, 2011
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