



Lecture Series

Collider Physics

by

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Date: May 18, 21, 23, 25 & 28, 2007

Time: 10:30 a.m. – 12:00 noon

Venue: LT2, Mong Man Wai Building, CUHK

1. Basics

Dirac Equation, QED, Feynman Rules, Cross-sections, *etc.*

2. Weak Interaction

V-A Theory, Muon Decay, Beta Decays of Hadrons, Quark Mixing

3. Parton Model and Strong Interaction

Deep Inelastic Scattering, Hadron-Hadron Collision, Structure Functions, Gluons, Quarkonium Physics

4. Standard Model

Gauge Principle, Gauge Group $SU(2) \times U(1) \times SU(3)$, Mass Generations, W and Z Properties, Precision Measurements and Radiative Effects, Jet Physics, B Physics and CP Violation

Reference Books:

Students can find supplemental reading from the following texts:

- V.D. Barger and R.J.N. Phillips, *Collider Physics*
 - C. Quigg, *Gauge Theories of the Strong, Weak, and EM Interactions*
 - L. Okun, *Leptons and Quarks*
 - F. Halzen and A. Martin, *Quarks and Leptons: An Introductory Course in Modern Physics*
 - R.K. Ellis, W.J. Stirling, and B.R. Webber, *QCD and Collider Physics*
 - S. Pokorski, *Gauge Field Theories*
 - T.P. Cheng and L. Li, *Gauge Theory of Elementary Physics*
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