



Collider Phenomenology

by

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Lecture 1 Overview in LHC Physics

Date and Time: 22 January 2008 (Tuesday), 3:30 – 4:30 p.m.

Venue: Room G06, Y. C. Liang Hall, CUHK

Abstract: *I will introduce the LHC program, with emphasis on search for new physics and importance of collider physics programs. I will also give a highlight of what I will talk about in the next few lectures.*

Lecture 2 Basics in Collider Physics

Date and Time: 24 January 2008 (Thursday), 3:30 – 4:30 p.m.

Venue: Lecture Theatre L2, Science Centre, CUHK

Abstract: *I start with some basic materials that a student should know in order to do some calculations, including calculation of Feynman diagrams, parton model, and experimental cuts. I will also give some details of how a detector works. A few simple examples are given.*

Lecture 3 Supersymmetry Phenomenology

Date and Time: 29 January 2008 (Tuesday), 3:30 – 4:30 p.m.

Venue: Lecture Theatre L2, Science Centre, CUHK

Abstract: *I will give an introduction to supersymmetry. Motivations as an elegant solution to the gauge hierarchy problem. Formulation of supersymmetric Lagrangian. Supersymmetric particle spectrum. Search for supersymmetry. Some collider phenomenology and some scenarios of SUSY breaking.*

Lecture 4 Connection with Cosmology

Date and Time: 31 January 2008 (Thursday), 3:30 – 4:30 p.m.

Venue: Lecture Theatre L2, Science Centre, CUHK

Abstract: *Recent development in cosmology told us that about a quarter of the mass of the Universe comes from dark matter, which is also hinted by many other experiments. Supersymmetry provides a natural candidate for the dark matter -- known as neutralino. I will discuss how collider experiments can help pin down the properties of the dark matter. Some other candidates are also discussed.*

ALL INTERESTED ARE WELCOME