Department of Theoretical Physics

Special Free Meson Seminar

Speaker	:	Tuhin Roy (University of Washington)
Topic	:	Jet Substructure @ the LHC - from Boosted to Bread & Butter Particle Physics
Day, Date & Time	:	Tuesday, April 16, 2013 at 4:0 p.m.
Place	:	AG 69

Abstract

Jets are outputs of clustering algorithms that group the energy cells of the calorimeter components of a detector in a well-defined way. After a brief introduction, I will review selected new ideas in jet physics. In the first part, I will discuss how the use of a non-deterministic jet-algorithm can render stability to jet observables. In the second part, I will introduce a new proposal where jets become a superset of both traditional objects such as QCD-jets, photons, and electrons, and more unconventional objects such as photon-jets and electron-jets, defined as collinear photons and electrons, respectively. Since standard objects such as single photons become a subset of jets in this approach, standard jet substructure techniques are incorporated into the photon finder toolbox. I demonstrate that, for a single photon identification efficiency of 80% or above, the use of jet substructure techniques reduces the number of QCD-jets faking photons by factors of 2.5 to 4.

(Nilmani Mathur)