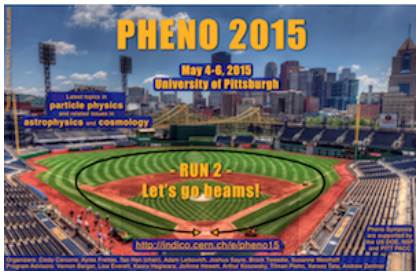

Contribution ID: **135** Type: **parallel talk**

Jet Energy Profiles for Electroweak Bosons

Monday 4 May 2015 14:00 (15 minutes)

At the LHC there will be highly boosted W, Z, and Higgs bosons. When these particles decay via the hadronic channel, they may form a single fat jet. We present a perturbative QCD factorization formula for substructures of an energetic Higgs jet, taking the jet energy profile resulting from the $H \to b\bar{b}$ decay as an example. The formula is written as the convolution of a hard Higgs decay kernel with the jet functions of two b quarks and a soft function that links colors of the two b quarks. In a special factorization scheme with one thin b-quark jet and one fat b-quark jet, the soft function reduces to unity, and the analysis is greatly simplified. We demonstrate that the energy profile within a Higgs jet, which differs significantly from those of ordinary QCD jets, can improve the Higgs identification in the $H \to b\bar{b}$ channel at the Large Hadron Collider. Our formalism is then extended to energy profiles of W- and Z-boson jets.

Authors: Prof. YUAN, C.-P. (Michigan State University); Prof. LI, Hsiang-nan (Academia Sinica, Inst. Phys.); ISAACSON, Joshua (Michigan State University); LI, Zhao (Michigan State University)

Presenter: ISAACSON, Joshua (Michigan State University)

Session Classification: QCD I