



Department of Physics

SPECIAL COLLOQUIUM

Monday, January 30, 2012

3:30 P. M. Robert Smith Seminar Room

1080 Physics Research Building

Brock Tweedie
Boston University

“Probing the Origins of the Higgs Boson
at the High Energy Frontier”

Just last month, experiments at the Large Hadron Collider presented their first hints of Higgs boson signals. There is hope within the particle theory community that finding the Higgs boson would be just the beginning of our exploration of a much richer sector of physics, one which underpins the phenomenon that gives rise to the masses of fundamental particles such as the electron and the mediators of the weak force. A compelling possibility is that the Higgs boson is not itself a fundamental particle, but instead arises from strongly-coupled dynamics that operates at TeV-scale energies. One of the most striking predictions of such a scenario is that the LHC will occasionally produce new ultra-heavy particles that immediately decay into highly energetic Higgs bosons, weak bosons, or top quarks. The resulting signals are extremely dramatic, but can be easily confused for more mundane physics processes involving jets of hadrons. I will provide an overview of these theoretical and experimental issues, and then discuss novel approaches to event reconstruction designed to fully reveal the signals of exciting new particles that might otherwise lie hidden in the data.

RECEPTION AT 3:00 P.M. IN VERNIER COMMONS, PRB