

# **Boston Jets Workshop 2014**

**Tuesday 21 January 2014 - Thursday 23 January 2014**

**Massachusetts Institute of Technology**

## **Scientific Programme**

This workshop will focus on maximizing the potential of newer, more sophisticated treatments of jets in collider physics that have emerged over the past several years. Of particular interest will be bringing physicists of various communities together to understand what experimental and theoretical uncertainties need to be brought under control, and what under-explored opportunities are present for jet physics.

Particular topics we hope to address include:

1. Traditionally, a jet was thought of as a proxy for a hard parton. Should we now think of subjects as proxies for particles? What new calibration strategies are needed to calibrate events at the subject level? Can these be reliably validated?
2. Can we characterize what effect pileup mitigation has on the underlying event? What universal statements can be made about hadronization and non-perturbative corrections? How do LHC measurements clarify or bring new perspective to strongly interacting physics?
3. Are there existing techniques that have not found their best applications? Are there channels or search strategies that are not making full use of measurable jet properties? Are all of our hammers striking the right nails?
4. In what measurements is precision understanding of jet/subject properties most beneficial? Are new precision measurements possible via substructure that would be otherwise inaccessible? What should be the flagship SM measurement for substructure techniques?
5. What about jet physics could be thought of as elegant in its own right? What measurements, for example, probe the hadron/parton duality underlying QCD?
6. Several different grooming/subtraction techniques now exist to address pileup mitigation. How should we optimize for universality vs. efficiency in combining them? What effect on calibration & validation schemes does pileup mitigation have?
7. How do demands on jets in heavy ion application differ from those in collider physics? Can jet substructure techniques be used to answer questions of interest to the heavy ion community? What are the prospects of quark/gluon discrimination in heavy ion events?