



181 Longwood Avenue  
Boston, Massachusetts 02115-5804

Department of Medicine  
Channing Division of Network Medicine

## Channing Network Science Seminar

February 26, 2016, 11am @ 5th floor conference room



Speaker: Pankaj Mehta, Ph.D.  
Associate Professor of Physics  
Department of Physics  
Boston University  
<http://physics.bu.edu/~pankajm/>

### Combining statistical physics with genome-wide datasets to understand cellular reprogramming dynamics

**Abstract:** In this talk, I discuss how we are combining ideas from statistical physics with large genomic datasets to construct “epigenetic landscapes” that give new insights into the molecular basis of cellular reprogramming - the direct conversion of one cell fate (e.g. neuron) into a different cell fate (e.g. stem cells). Our landscape models identify key transcription factors for reprogramming, explain the existence of partially-reprogrammed cells, and identify a universal reaction coordinate for reprogramming dynamics. I will also present a new class of practical algorithms inspired by our landscape models, Linear Algebra-based Projections (LAP) scores, for assessing the fidelity of cellular reprogramming and cellular differentiation protocols.

**Bio:** Pankaj Mehta is Associate Professor of Physics at Boston University and a member of the BU Center for Regenerative Medicine. His research interests lie at the intersection of physics, biology, and machine learning.

Hosted by Yang-Yu Liu