

Co-hosted with the

Warren Center for Network & Data Sciences

Cosmology in the Era of Big Data: Understanding Our Universe a Bit at a Time.

Monday June 16, 2014**3:00 PM****David Rittenhouse Laboratory (Room A6)
University of Pennsylvania**

Professor Andrew Connolly
University of Washington at Seattle

With the development of new detectors, telescopes and computational facilities, astrophysics has entered an era of data intensive science. During the last decade, astronomers have surveyed the sky across many decades of the electromagnetic spectrum, collecting hundreds of terabytes of astronomical images for hundreds of millions of sources. Over the next decade, data volumes will reach tens of petabytes, and provide accurate measurements for billions of sources. In this talk I will discuss some of practical statistical challenges that we face when analyzing data that, while massive in size, is intrinsically noisy and incomplete. I will show how, by combining compression and dimensionality reduction techniques with our knowledge of the underlying astrophysics, we can overcome some these challenges and address questions as diverse as the detection of potentially Earth impacting asteroids through to the nature of dark energy and dark matter.

Organizer: Bhuvnesh Jain

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