

Field:

Mathematics/Applied Mathematics/Informatics

Session Topic:

Web-Scale Computation

Speaker:

Andrew CONNOLLY, University of Washington

Astrophysics is addressing many fundamental questions about the nature of the universe through a combination of ambitious imaging surveys and large-scale cosmological simulations. Designed to probe the enigmatic nature of the Dark Energy and Dark Matter, that dominates the mass-energy density of the Universe, these experiments present many fundamental analysis challenges. How can we analyze and interact with data that will be generated at a rate a 1000 times greater than existing efforts? How will we extract meaningful information from a cosmological simulation where just one snapshot contains nearly a petabyte of data? How will we compare simulations and wide-field survey data when the data contain thousands of dimensions and tens of billions of sources? In this talk I will describe some of scientific challenges and opportunities posed by a new generation of Astrophysical experiments. I will focus on how emerging web-scale computing techniques can be used in the processing, storage and analysis of petabyte scale data repositories and how this might enable a new model for knowledge discovery in Astronomy.