



# **A rich and evolving tapestry of cosmic structure**

## **Niel Brandt**

Pennsylvania State University

Friday, November 2 • 7:30 pm  
1800 Dow Chemistry Building,  
930 North University Ave., Ann Arbor

Galaxies and gas in the local universe are mostly located along filaments, leaving enormous voids. Brandt will describe how astronomers have heroically mapped these ultimate cosmic structures by measuring the precise locations of more than a million galaxies. These data, combined with powerful computer simulations, strikingly indicate that the seeds of these vast structures arose during the first instants after the Big Bang. These seeds were amplified by gravitational forces, acting consistently over 13.7 billion years of cosmic history, into giant concentrations of dark matter and gas. In these concentrations the gas could cool, condense, and fragment to form galaxies, stars, planets, and life.

**Niel Brandt** is Professor of Astronomy and Astrophysics at The Pennsylvania State University. Brandt earned his PhD in Astronomy from the University of Cambridge, United Kingdom. Brandt calls his research interests “adventures in the X-ray universe;” they include deep extragalactic X-ray surveys and high-redshift ( $z > 4$ ) X-ray detections. He received the Newton Lacy Pierce Prize of the American Astronomical Society in 2004 and the National Science Foundation CAREER Award in 2000. Brandt is chair of the Science Collaboration on active galaxies for the Large Synoptic Survey Telescope. More information is available at [www.astro.psu.edu/users/niel/](http://www.astro.psu.edu/users/niel/).