



LABORATORY FOR ELEMENTARY-PARTICLE PHYSICS (LEPP)

# Joint Experimental and Theory Seminar in Particle Physics and Cosmology:



**Anže Slosar**  
**BNL**

**21-cm cosmology  
after 2021**

Universe is full of neutral hydrogen that shines in the 21-cm spin-flip transition. Mapping the universe in 3D using this line is in principle an extremely cheap and simple method, but has in practice proven to be a devilishly difficult. I will argue that this technique nevertheless offers the most promising way to complete the programmatic goal of measuring the linear scales of the universe deep into the pre-acceleration era after the current crop of optical experiments complete observing. It will give us expansion history measurements to  $z=6$ , which can constrain early dark energy and modified gravity. It will give us several new screens to study weak gravitational lensing and perhaps even allow direct measurements of real-time expansion of the universe. I will discuss the scientific, technological and programmatic issues that need to be overcome to make such experiment a reality.

**Friday, May 4, 2018**

**1pm**

**401 Physical Sciences Bldg.**