



LABORATORY FOR ELEMENTARY-PARTICLE  
PHYSICS (LEPP)

# Theory Seminar



**Matthew Reece**

**Harvard**

**Photon Masses in the  
Landscape and Dark  
Photon Dark Matter**

In effective field theory, spin-1 particles can have two kinds of masses, Stückelberg masses or masses arising from the Higgs mechanism. In the first half of the talk I will clarify the distinction between the two types and argue that a version of the Weak Gravity Conjecture places strong constraints on Stückelberg masses. I will comment on implications for the mass of the Standard Model photon and for dark photons. In the second half of the talk I will discuss a new cosmological mechanism for populating dark photon dark matter, which operates by storing energy in an axion field that efficiently converts into dark photons.

**Wednesday, Nov. 14, 2018**

**2:00pm**

**401 Physical Sciences Building**