

# UIC COLLOQUIUM

## Department of Physics

**Wednesday, February 19, 2020**

### **“Bridging Low and High Energies at the Electron-Ion Collider”**

**Dr. Timothy Hobbs**

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Nuclear and particle physics are both presently grappling with an array of fundamental questions, running from the dynamical origin of hadronic mass and spin on the one side, to the urgent need to identify dark matter on the other. Given this situation, we expect a future deeply-inelastic scattering (DIS) collider --- the Electron-Ion Collider (EIC) for which DOE recently announced a critical mission need (or, "CD-0") --- to play an essential role in addressing these and many other issues. The enormous power of the EIC derives from its very high luminosity (~100 times that of HERA) and the relative phenomenological cleanliness of the DIS process itself, which will afford unprecedented resolution to visualize the wave functions and internal dynamics of hadrons and nuclei. As the only collider slated for construction in the US in the coming half-century, the EIC represents a vital opportunity for particle and nuclear physics, but one which will require serious input from both communities to maximize the eventual scientific output. In this talk, I will review the primary objectives of the EIC program and survey the large impact it can be expected to have on a wide range of physics questions from low to high energies. I will highlight active areas of research in this effort representing clear opportunities for expansion and involvement of students and young researchers.

**The Department of Physics Colloquium will be held at 3pm in 238 SES.**

*\*Refreshments will be served from 2:45 pm to 3pm outside of room 238 SES*