

# Department of Physics and Astronomy Colloquium Series

**Tuesday, February 3, 2026, 2:30pm in PSE 317**

**Speaker:** Changhyun Cho

**Institution:** York University

**Title:** Interpreting the High-Redshift Universe through Cosmological Simulations

**Abstract:**

Observations from the James Webb Space Telescope (JWST) have revealed high-redshift galaxies and supermassive black holes with masses and growth rates that are difficult to explain with standard models of galaxy formation. Interpreting these systems requires theoretical frameworks that link small-scale physical processes to galaxy evolution on much larger scales. In this seminar, I will introduce how high-resolution cosmological hydrodynamic simulations can be used to study the physical processes shaping galaxies in the early universe. I will focus on the role of supermassive black hole feedback, and demonstrate how realistic modeling of these processes helps explain the suppression of star formation in massive galaxies. I will also discuss how these simulations provide insight into related topics, including the formation of star forming clumps at high redshift, and key physical processes during the Epoch of Reionization.