# The Cosmos and Its Simulacra: Computationally Modelling the Sky Across Disciplines


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Abstract: I'm intrigued by many different facets of the Universe and I love to follow my curiosity across physical scales and academic disciplines. Consequently, in this talk I will present two research programs which are very distinct in topic, but woven together by the fundamental concept of a model. I'll begin by digging into the concept of a model—its utility, as well as its limitations—and briefly describe the current best model of the Universe in cosmology, ΛCDM. I will then move into my work in modelling ultralight dark matter halos and using their eigenstates to test observable consequences. Finally, I will briefly discuss how I leverage AstroPy to analyze stellar data in hieroglyphic inscriptions from the Valley of the Kings in Egypt and model ancient observational practices.


Bio: Dr. Luna Zagorac is a Postdoctoral Fellow at the Perimeter Institute for Theoretical Physics, specializing in particle cosmology. Her research explores wave-like phenomena in the Universe, including wave dark matter, boson stars, inflaton condensates, and gravitational waves. She also works across disciplines, applying quantum-inspired techniques to numerical simulations of axion-like dark matter and developing a Python package that maps ancient Egyptian star data from hieroglyphs to virtual skies.