CoCo Seminar Series Spring 2026

[Extra CoCo Seminar] Entropy, Coarse-graining, and the 2nd Law of Thermodynamics

Dr. Jordan Scharnhorst
Postdoctoral Fellow, Foundational Questions Institute

Tuesday March 24, 2026 12:15-1:15pm EDT
Hybrid (EB-R15 & Zoom; meeting link available on http://coco.binghamton.edu/)

Entropy and the associated second law of thermodynamics have been the subject of consistent debate both historically and contemporarily. There are dozens of entropies, each with its own context, interpretation, and use cases. In this talk, we will discuss basic definitions of entropy and the second law, then introduce Observational entropy, a modern framework for understanding and unifying many disparate definitions of entropy. Central to observational entropy is the notion of coarse-graining, which we will use to motivate the deep mystery behind the second law. I will elaborate on the canonical solution, called the Past Hypothesis, to this mystery and my previous work on how this canonical solution can fail on philosophical grounds. We end with an investigation into what the second law looks like with a well-motivated modification to the past hypothesis.

Jordan Scharnhorst is a theoretical physicist studying the arrow of time, the philosophical foundations of cosmology, the perplexing relations between the two. He also studies and works in complex systems, and he is very interested in the relationships between entropy and complexity. Some might describe him as a relativist and a Bayesian. He is inspired by non-dual philosophy and looks forward to an increasing synthesis of Eastern philosophy into the physical sciences. Jordan received his PhD in physics at UC Santa Cruz with Anthony Aguirre.

For more information, contact Carlos Gershenson (cgg@binghamton.edu). http://coco.binghamton.edu/