Chez Pierre

Presents ...

Friday, March 13, 2026
11:00 am - 12:00 noon
Duboc Room - 4-331

Special Chez Pierre Seminar

Tim Hsieh, Perimeter

"Decodable and Unlearnable Phases and Transitions".

Physics has been driven by the discovery of novel phases of matter, largely in materials. Recently, the advent of both quantum error correction and machine learning, viewed as physical phenomena, has compelled us to revisit the notion of a phase itself. I will show how decodable/undecodable regimes of codes constitute distinct phases in a precise sense, and they furnish machine unlearnable/learnable phases of data. I will demonstrate how conditional mutual information (CMI) serves as an essential quantity in characterizing the corresponding phases and transitions and thus provides a new diagnostic for both error correction thresholds and machine learnability of quantum and classical systems, including real-world data.