

Chez Pierre

Presents ...

Monday, April 22, 2019

12:00pm Noon

MIT Room 4-331

Chez Pierre Seminar

Eun-Ah Kim - Cornell University

“Learning Quantum Emergence with AI”

Decades of efforts in improving computing power and experimental instrumentation were driven by our desire to better understand the complex problem of quantum emergence. However, increasing volume and variety of data made available to us today present new challenges. I will discuss how these challenges can be embraced and turned into opportunities by employing machine learning. It is important to note that the scientific questions in the field of electronic quantum matter require fundamentally new approaches to data science for two reasons: (1) quantum mechanical imaging of electronic behavior is probabilistic, (2) inference from data should be subject to fundamental laws governing microscopic interactions. Hence learning quantum emergence with AI requires collective wisdom of applied math, computer science, and condensed matter physics. I will review rapidly developing efforts by the community in using machine learning to solve problems and gain new insight. I will then present my group’s results on phase recognition and analysis of voluminous experimental data.

