

# *Chez Pierre*

Presents ...

Monday, November 7, 2022

12:00 pm

Duboc Room - 4-331



## **Chez Pierre Seminar**

**Shiwei Zhang, Flatiron Institute**

**“Magnetic orders, stripes, and superconductivity - insights from computations on the Hubbard model”.**

The Hubbard model is fundamental to quantum many-body physics. Since the discovery of high-temperature superconductivity, it has been a focal point in condensed matter and more recently also in the field of ultracold atoms. The properties of the two-dimensional Hubbard model are often the outcome of a delicate balancing act between multiple competing or co-existing tendencies. This makes it extremely demanding for computational approaches to determine the properties - and make predictions (e.g., as a function of parameter values) which can serve as a guide to theory and experiments. Recently, significant progress has been made via advances in algorithms and the combined use of complementary methods in a multi-messenger manner. I will discuss some of these developments, what they have revealed about the physics of the Hubbard model, and the prospect of accurate and systematic computations in more realistic quantum systems.