Abstract

In this talk I will present some recent progress on the construction of ground state of the honeycomb Hubbard model, which is a prototypical model for studying phase transitions in quantum many-body system. Using fermionic cluster expansions and constructive renormalization theory, we proved that the ground state of this model is not a Fermi liquid in the mathematical precise sense of Salmhofer. We also derived the non-perturbative critical temperature for the phase transition. This presentation is based on the joint work with V. Rivasseau: arXiv:2108.10852.