Cellular dynamical mean field study of Mott transition in triangular lattice Hubbard model

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The Mott metal-insulator transition is one of the central issues in the physics of strongly correlated electron systems. Recently, a novel spin liquid ground state has been suggested for the Mott insulating phase [1] of organic materials such as κ-$(\mathrm{BEDT\text{-}TTF})_2\mathrm{X}$ [2], which has activated intensive theoretical studies for the Mott transition of the triangular lattice Hubbard model [3-5].

We study the Mott transition of the Hubbard model on the anisotropic triangular lattice using the cellular dynamical mean field theory combined with the quantum Monte Carlo method. By calculating static and dynamical correlation functions, we systematically study the finite-temperature Mott transition. We also calculate the spin and pair susceptibilities, and discuss the magnetic and superconducting phase transitions.

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