Condensed Matter Theory Center Seminar

Wednesday, May 18
11am-12pm
2205 Physics Building

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"Tensor-net work states: a new approach to strongly correlated systems"

Traditional condensed matter physics is based on two theories: symmetry breaking theory for phases and phase transitions, and Fermi liquid theory for metals. Mean-field theory is a powerful method to describe symmetry breaking phases and phase transitions by assuming the ground state wavefunctions for many-body systems can be approximately described by direct product states. The Fermi liquid theory is another powerful method to study electron systems by assuming that the ground state wave functions for the electrons can be approximately described by Slater determinants. In this talk, I will introduce a new class of states: Tensor-net work states. These states not only allow us to describe new phases of matter, but also provide us new tools to study spin/electron systems with strong correlations. I will give several interesting examples to show the power of this new approach, including the famous t-J model (strongly coupling limit of the Hubbard model) on honeycomb lattice geometry.

All are welcome to attend.

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