



Thursday, Feb. 23, 2017 - 16:00 h
CFEL Seminar room IV (O1.111)

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"Time-dependent variational Monte Carlo method for nonequilibrium strongly correlated electron systems and its application"

Strongly correlated electron systems driven out of equilibrium have attracted much attention because of potential routes to realizing intriguing phenomena that are not attainable in the equilibrium. To treat such systems, we proposed a time-dependent trial wave function with many variational parameters for the time-dependent variational Monte Carlo method. To show the accuracy of our trial wave function in nonequilibrium states, we present our benchmark results for relaxation dynamics during and after interaction quench protocols of fermionic Hubbard models. We find that our trial wave function well reproduces the exact results for the time evolution of physical quantities such as momentum distribution and superconducting correlations. As its application, I will show the dynamics of d-wave superconductivity in two-dimensional correlated electron system under a laser irradiation. Our results show that the superconductivity can be enhanced by irradiating strong laser. I will discuss the origins of this enhancement associated with the laser effect and the relation between superconductivity and charge inhomogeneous phases.

Host: Martin Eckstein

