**Computational approach**

**to strongly correlated electron system**

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Quantum materials often exhibit emergent properties that are not understood solely based on their components. For example, strong correlations between electrons can lead a system to reveal fractionalized excitations whose physical properties are far different from electrons. While this emergence is a fascinating topic in condensed matter physics, it brings challenges for computational investigations. Computational costs to trace interactions between components exponentially increase as the system grows. In this lecture, I discuss the importance of appropriate computational methodology and introduce computational approaches to strongly correlated electron systems to deal with the exponential growth of computational costs.

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**Educational Background**

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2005 B. S. in Physics, Seoul National University, Seoul, Korea.

**Professional Experience**

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2016-2020 Junior Research Team Leader (Tenure track), Center for Theoretical Physics of Complex Systems, Institute for Basic Science, Korea

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**Current Research Interest**

Machine learning application to strongly correlated systems

Quantum spin liquids

Hund’s metallicity

Dynamical mean-field theory and impurity solvers

Strongly correlated electron systems