NIST Sigma Xi Chapter
Katharine B. Gebbie
Young Investigator Lecture

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Applied and Computational
Mathematics Division
Information Technology Laboratory

Computational Complexity of Quantum Field Theory

Thursday, March 30, 2017 at 2:30 p.m.
Building 101, Green Auditorium

Numerical simulation of quantum dynamics is a notoriously difficult problem, which can take exponential time and memory in the worst case. In contrast, quantum computers promise to solve this problem with resources scaling polynomially in the number of particles. In this talk I will describe recent theoretical work with Keith Lee, John Preskill, and Hari Krovi showing that quantum computers, once built, will also have exponential advantage over classical computers for simulating relativistic quantum field theories. Prior knowledge of computational complexity and quantum field theory will not be assumed.

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