Quantum Computing and the Entanglement Frontier

John Preskill, Caltech

Thursday, May 11, 2017 - 7:30pm
Kane Hall 130

The quantum laws governing atoms and other tiny objects seem to defy common sense, and information encoded in quantum systems has weird properties that baffle our feeble human minds. John Preskill will explain why he loves quantum entanglement, the elusive feature making quantum information fundamentally different from information in the macroscopic world. By exploiting quantum entanglement, quantum computers should be able to solve otherwise intractable problems, with far-reaching applications to cryptology, materials, and fundamental physical science. Preskill is less weird than a quantum computer, and easier to understand.

John Preskill is the Richard P. Feynman Professor of Theoretical Physics at the California Institute of Technology, and Director of the Institute for Quantum Information and Matter at Caltech. Preskill received his Ph.D. in physics in 1980 from Harvard, and joined the Caltech faculty in 1983. Preskill began his career in particle physics and cosmology, but in the 1990s he got excited about the possibility of solving otherwise intractable problems by exploiting quantum physics; he is especially intrigued by the ways our deepening understanding of quantum information and quantum computing can be applied to other fundamental issues in physics, such as the quantum structure of space and time. You can follow him on Twitter @preskill

Resource Materials for Lecture:
- Study Guide to Professor John Preskill's Lecture on Quantum Computing
- A Musical Analogy for Quantum Computing
For interested readers, here are articles and on-going research in this exciting field:

- Simple Rules for a Complex Quantum World
- Can we exploit the weirdness of quantum mechanics?
- What Can We Do with a Quantum Computer?