PHYSICS AND ASTRONOMY COLLOQUIUM

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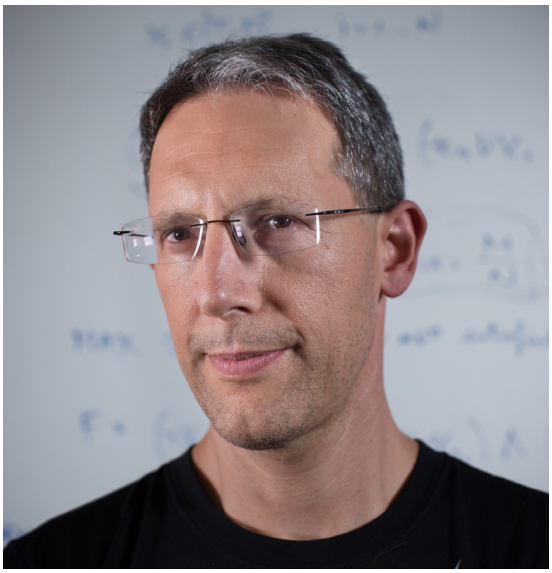
Quantum annealing with hundreds of qubits



Quantum annealing exploits quantum effects to speed up the solution to tough optimization problems. In October 2011 USC and Lockheed Martin jointly founded a quantum computing center housing a commercial quantum annealer built by the Canadian company D-Wave Systems. These are special-purpose processors that use up to 512 superconducting flux qubits to find the ground state of a broad class of non-planar classical Ising models with as many spins as qubits. There has been much controversy surrounding the D-Wave processors, questioning whether they offer any advantage over classical computing. This talk will survey the recent work we have done to benchmark the processors against highly optimized classical algorithms, to test for quantum effects, and to perform error correction.

THURSDAY, SEPTEMBER 18, 2014 | 4:00 PM | HAWKING AUDITORIUM