ARTIFICIAL INTELLIGENCE LABORATORY

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

PHYSICS OF COMPUTATION SEMINAR

Date: Tuesday, March 3, 1998
Time: Talk at **3pm**
Refreshments after the talk
Place: NE43-941

Quantum Computation and Quantum Error Correction

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Quantum computation is a new and exciting emerging field bringing together information, computer and physical sciences. It has recently been discovered that if computers obey the laws of quantum mechanics (instead of the usual classical ones) they can be much more powerful than their classical counterparts. So why don't we have quantum computers? The "catch" lies in the difficulty of building such machines due to the fragility of quantum information. In this talk, I will describe some fundamental ideas of quantum computation, and will also explain how it might be possible to render these computers more robust against imperfections using quantum error correcting codes. Finally I will describe recent experiments attempting to build such quantum computers and implemeting a very simple quantum error correction code.

Host: Seth Lloyd

This talk is part of a seminar series on adapting computers and computations to the constraints of, and opportunities afforded by, microphysics; and on the development and application of the physical theory of computation and information. If you would like to receive electronic notice of these seminars, send email to "poc@mit.edu."