ARTIFICIAL INTELLIGENCE LABORATORY

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

PHYSICS OF COMPUTATION SEMINAR

Date: Monday, November 17, 1997
Time: Talk at **4pm**
Refreshments after the talk
Place: NE43, 8th-floor AI Playroom

Almost any quantum mechanical system can perform rapid search

Lov K. Grover
Bell Labs

Last year it was shown that quantum mechanical computers can search a database considerably faster than classical computers. The quantum search algorithm was originally derived by using subtle properties of a particular quantum mechanical operation called the Walsh-Hadamard (W-H) transform. It has just been discovered that the search algorithm can be implemented equally efficiently by replacing the W-H transform by almost *any* quantum mechanical operation. This leads to new quantum mechanical algorithms, many of which are not directly connected with search. Also, this broadens the scope for implementing quantum computers since it shows that quantum mechanical algorithms can readily adapt to available technology.

Host: Norm Margolus

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."