LABORATORY FOR COMPUTER SCIENCE

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

PHYSICS OF COMPUTATION SEMINAR

Date: Monday, March 14, 1994
Time: 4:00pm
Place: 6-120

Simple Models of Complex Fluids

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Momentum-conserving lattice-gas automata are simple, discrete, microscopic models of fluids. This talk presents an overview of recent progress in the development of these lattice gases, with emphasis on models of immiscible fluid mixtures. These immiscible lattice gases exhibit phase separation, have surface tension at interfaces, and may be used for the simulation of multiphase flow. The talk will include discussions of theoretical aspects of the models—i.e., their hydrodynamics, phase transitions, and the properties of interfaces—in addition to describing illustrative examples of the simulation of certain complex-fluid problems, such as multiphase flow through porous media and sedimentation.

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. This series is being sponsored by the MIT Information Mechanics Group (Lab for Computer Science), in conjunction with the MIT Physics and Media Group (Media Lab), the MIT Porous Flow Project (Earth, Atmospheric and Planetary Sciences), and the Mathematical Sciences Research Group at Thinking Machines Corporation. If you would like to receive electronic notice of these seminars, send email to "poc@im.lcs.mit.edu."