

COLLOQUIUM

DEPARTMENT OF MATHEMATICS AND STATISTICS
OAKLAND UNIVERSITY
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A Framework for Validation of Computer Models

Abstract

In this seminar, we present a framework that enables computer model evaluation oriented towards answering the question:

Does the computer model adequately represent reality?

The proposed validation framework is a six-step procedure based upon a Bayesian statistical methodology. The Bayesian approach is particularly suited to treating the major issues associated with the validation process: quantifying multiple sources of error and uncertainty in computer models; combining multiple sources of information; and updating validation assessments as new information is acquired. Moreover, it allows inferential statements to be made about predictive error associated with model predictions in untested situations.

The framework is implemented on two simple testbed computer models to provide context for the validation approach.

372 Science and Engineering Building

Thursday, 10th April, 2003

3:00 to 4:00 P.M.

**(Refreshment at 2:30 to 3:00 P.M. in Room 368,
Science and Engineering Building)**

About the speaker

Dr. James C. Cavendish is a principal research scientist in the Manufacturing Systems Research Department at the General Motors Research and Development Laboratories. His research interests include surface modeling, numerical methods in computational fluid dynamics, finite element mesh generation, and validation of mathematical models and computer simulations. Cavendish earned his MA in mathematics from Columbia University and his PhD in mathematics from the University of Pittsburgh.