Large-Scale Computer Models for Environmental Systems

Workshop on Simulation and Optimization

April 28 – 30, 2003

Radisson Governors Inn

PROGRAM & SCHEDULE OF EVENTS

Monday, April 28, 2003
Optimization of Remediation Systems

8:30-9:00 Registration

9:00-9:45 "Groundwater Optimization: Advantages and Disadvantages of Derivative-Based, Heuristic and Surface Approximation Methods"
Christine Shoemaker, Cornell University

9:45-10:30 "The Inverse Problem Of Parameter Structure Identification"
William Yeh, University of California, Los Angeles

10:30-11:00 Coffee Break

11:00-11:45 "Optimization of Engineering Design of Subsurface Environmental Remediation Systems- Development and Testing of Community Benchmark Problems"
Alex Mayer, Michigan Technological University

11:45-12:30 "Optimal Design for Groundwater Flow and Remediation Problems"
Kathleen Kavanagh, North Carolina State University

12:30-1:30 Lunch

Monday, April 28, 2003 (continued)
Future of Simulation: Emerging Models

1:30-2:15 "A Highly Efficient Conditional Moment Algorithm for Transient Flow in Random Porous Media"
Shlomo Neuman, University of Arizona

2:15-3:00 "Future of Simulation: Emerging Models"
Dennis McLaughlin, Massachusetts Institute of Technology

3:00-3:30 Coffee Break

3:30-4:15 "On the Governing Equations of Flow in Porous Media"
William G. Gray, Notre Dame University

4:15-4:45 Open Discussion

6:30-8:00 **Poster Session and Reception**
NISS-SAMSI Building
Transportation from Radisson Governors Inn will be provided by Carolina Livery

Tuesday, April 29, 2003
Stochastic and Deterministic Simulation

8:30-9:00 Registration

9:00-9:45 "The Department of Defense's ADaptive Hydraulics/Hydrology Model (ADH)"
Stacy Howington, Engineer Research and Development Center

9:45-10:30 "Advanced Modeling Techniques for Numerical Simulation of Complex Subsurface Hydrosystems"
Mary F. Wheeler, Texas Institute for Computational and Applied Mathematics

10:30-11:00 Coffee Break

11:00-11:45 "Annoying Issues In Numerical Simulation Of Subsurface Transport"
Thomas F. Russell, University of Colorado at Denver

11:45-12:30 "Nonlinear Solution and Sensitivity Methods for Variably Saturated Flow"
Carol S. Woodward, Lawrence Livermore National Laboratory

12:30-1:30 Lunch

1:30-2:15 "Discontinuous Galerkin Methods for Convection-Diffusion Problems"
Clint Dawson, University of Texas at Austin

2:15-3:00 "Non-Newtonian Fluid Flow Through an Extrusion Filter"
Lea Jenkins, Clemson University

3:00-3:30 Coffee Break

3:30-4:15 "Pore-Scale Modeling for Closure of Multiphase Models Derived Using Thermodynamically Constrained Averaging Theory Approaches"
Cass T. Miller, University of North Carolina

4:15-4:45 Open Discussion

Wednesday, April 30, 2003

8:30-9:00 Registration

9:00-9:45 "Constrained Optimization of Expensive Functions Using Surrogates"
John Dennis, Rice University

9:45-10:30 "Stochastic Programming Approach to Uncertainty and Risk"
Darinka Dentcheva, Stevens Institute of Technology

10:30-11:00 Coffee Break

11:00-11:45 "Adaptive Numerical Methods for Sensitivity Analysis of Differential-Algebraic Equations and Partial Differential Equations"
Linda Petzold, University of California Santa Barbara

11:45-12:30 "Using Nonlinear Interior Point Methods for Optimal Groundwater Contamination Containment"
Pamela J. Williams, Sandia National Laboratories

12:30-1:30 Lunch

1:30-2:15 "Optimal Designs for Monitoring the Extremes of Environmental Processes"
Jim Zidek, University of British Columbia

2:15-3:00 "Environmental Applications of the Stochastic Engine"
Steven F. Carle, Lawrence Livermore National Laboratory

3:00-3:30 Coffee Break

3:30-4:15 "Implicit Filtering"
C. T. Kelley, North Carolina State University

4:15-4:45 Open Discussion