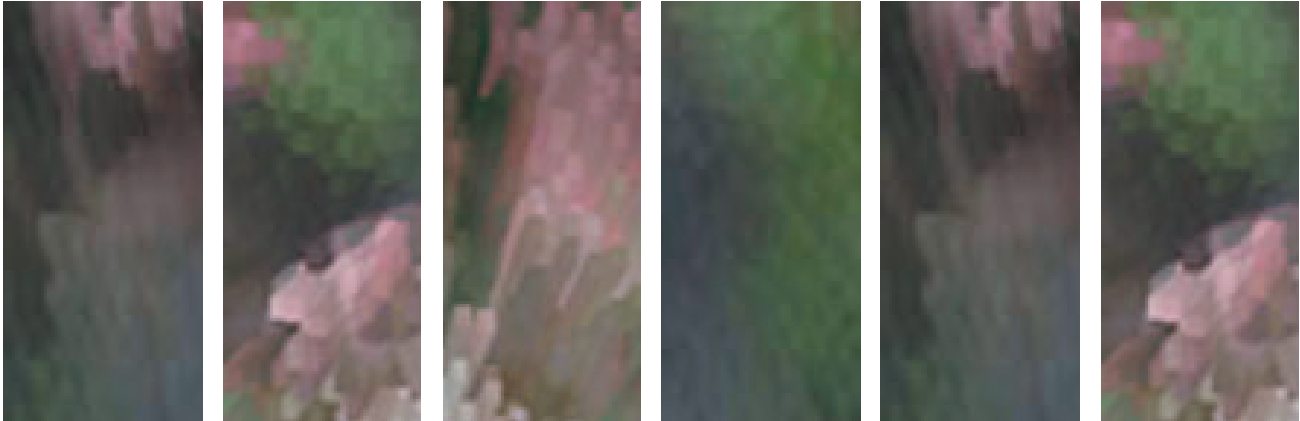


PROGRAM OF EVENTS: SEPTEMBER 15-17, 2004

■ ■ NSF WORKSHOP ON RELIABLE ENGINEERING COMPUTING ■ ■



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Ramon E. Moore *and*
Eldon R. Hansen

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EVENT COORDINATION

Center for Reliable Engineering Computing
Georgia Tech Savannah

PROGRAM: WEDNESDAY, SEPTEMBER 15, 2004

■ ■ NSF WORKSHOP ON RELIABLE ENGINEERING COMPUTING ■ ■

Georgia Tech Savannah

Program Administration and Research Building, Room 126

8:00 - 8:30 **Opening Remarks**

8:30 - 9:00 Ramon E. Moore
Introductory Remarks on Reliable Engineering Computing

9:00 - 9:30 G. Alefeld
Improved Methods for Solutions of Complementarity Problems

9:30 -10:00 Ruud van der Pas and Bill Walster
Interval Arithmetic Support in the Sun Fortran Compiler

10:00 - 10:30 **Coffee Break**

10:30 -11:00 S. Ferson, V. Kreinovich and Troy W. Tucker
Untangling Equations Involving Uncertainty: Deconvolutions, Updates, and Back Calculations

11:00 -11:30 Iwona Skalna
A Method for Outer Interval Solution of Parametrized Systems of Linear Equations

11:30 -12:00 Janos G. Hajagos
Low-Dose Extrapolation Models for Reliable Human Health Assessment

12:00 - 1:00 **Lunch**

1:00 - 1:30 S.F. Wojtkiewicz
Ensemble Uncertainty Quantification

1:30 - 2:00 F. Tonon
A Search Algorithm for Calculating Validated Reliability Bounds

2:00 -2:30 R.B. Kearfott and G.F. Corliss
Structural Analysis with Uncertainty Preliminary Comparisons

2:30 - 3:00 D. Myers and S. Ferson
Blending Data and Models Under Uncertainty and Variability

3:00 - 3:30 **Coffee Break**

3:30 - 4:00 Kyoko Makino and Martin Berz
Recent Advances in the Validated Integration of ODE's

4:00 - 4:30 S. Smith, L. Lai and R. Khedri
Requirements Analysis for Engineering Computation

4:30 - 5:00 Daniel Berleant, Jianzhong Zhang and Gerald Sheblé
On Completion Times of Networks of Concurrent and Sequential Tasks

7:00 **Tour of Historic Savannah**

Participants should meet outside the Hampton Inn at 6:45 PM to begin boarding.

NOTES: Transportation has been arranged to and from the Savannah campus of Georgia Tech for all workshop participants. Trolleys will begin boarding each morning at 7:15 AM at the entrance to the Hampton Inn, and will return to the hotel at the conclusion of each workshop day. An additional shuttle will be available immediately after lunch for anyone who wishes to return to the hotel.

All participants are invited to a welcome reception at the Hampton Inn on September 14th, from 7:30-9:30 PM.

PROGRAM: THURSDAY, SEPTEMBER 16, 2004

■ ■ NSF WORKSHOP ON RELIABLE ENGINEERING COMPUTING ■ ■

Georgia Tech Savannah

Program Administration and Research Building, Room 126

- 8:15 - 9:00 Eldon Hansen
Bounding Solutions of Interval Linear Equations
- 9:00 - 9:30 George Corliss and Christopher M. Foley
Reliable Analysis of Structural Steel Frames
- 9:30 -10:00 E. Acar, A. Kale and R.T. Haftka
Effects of Error, Variability, Testing and Safety Factors on Aircraft Safety
- 10:00 - 10:30 Coffee Break**
- 10:30 -11:00 Raluca Rosca, Raphael Haftka and Efstratios Nikolaidis
Experiments for Detection of Weaknesses in Models of Uncertainty
- 11:00 -11:30 Zissimos P. Mourelatos and Jinghong Liang
An Efficient Unified Approach for Reliability and Robustness in Engineering Design.
- 11:30 -12:00 V. Kreinovich, C. Ferregut, J. Beck, A. Sanchez, G.R. Keller, M. Averill and S.A. Starks
Monte-Carlo-Type Techniques For Processing Interval Uncertainty and Their Engineering Applications
- 12:00 - 1:00 Lunch**
- 1:00 - 1:30 M. Kokkolaras, Z.P. Mourelatos and P.Y. Papalambros
Optimal Multilevel System Design Under Uncertainty
- 1:30 - 2:00 M. Bêtkowski and A. Pownuk
Risk of Cost Using Monte Carlo Simulation with Fuzzy Parameters in Civil Engineering
- 2:00 -2:30 S.A. Starks, V. Kreinovich, L. Longpre, M. Ceberio, R. Araiza, J. Beck, R. Kandathi, A. Nayak, R. Torres and G. Xiang
Towards Integration of Probabilistic and Interval Errors in Engineering Calculations
- 2:30 - 3:00 M. Beer, M. Liebscher and B. Möller
Structural Design Under Fuzzy Randomness
- 3:00 - 3:30 Coffee Break**
- 3:30 - 4:00 David Bogle, David Johnson and Sujana Balendra
Handling Uncertainty in the Development and Design of Chemical Processes
- 4:00 - 4:30 W. Edmonson, W. Alexander, C. Gloster and E. Hughes
Interval Arithmetic Requirements For Digital Signal Processors
- 4:30 - 5:00 Y. Wang
Solving Interval Constraints in Computer-Aided Design
- 5:00 - 5:30 Martin Berz and Kyoko Makino
High-Order Dependency Free Range Bounding for Validated Global Optimization
- 7:00 Banquet**
First City Club

PROGRAM: FRIDAY, SEPTEMBER 17, 2004

■ ■ NSF WORKSHOP ON RELIABLE ENGINEERING COMPUTING ■ ■

Georgia Tech Savannah

Program Administration and Research Building, Room 126

- 8:30 - 9:15 Arnold Neumaier
Worst Case Bounds in Finite Element Computations
- 9:15 - 9:45 Mark A. Stadtherr
Reliable Modeling and Optimization for Chemical Engineering Applications: Interval Analysis Approach
- 9:45 - 10:15 Sebastião C. Pereira, Ulisses T. Mello, Nelson M.A.D. Ebecken and Rafi L. Muhanna
Uncertainty in Thermal Basin Modeling: An Interval Finite Element Approach
- 10:15 - 10:30 Coffee Break**
- 10:30 - 11:00 P.S.V. Nataraj and Tharewal Sachin
A Computational Approach to Existence Verification and Construction of Robust QFT Controllers
- 11:00 - 11:30 A. Pownuk
Efficient Method of Solution of Large Scale Engineering Problems with Interval Parameters Based on Sensitivity Analysis
- 11:30 - 12:00 M. Modares, R. Mullen, R. Muhanna and H. Zhang
Buckling Analysis of Structures with Uncertain Properties and Loads Using an Interval Finite Element Method
- 12:00 - 1:00 Lunch**
- 1:00 - 1:30 P.S.V. Nataraj and Shanta Sondur
On Range Computations Using Extrapolation and NIE
- 1:30 - 2:00 Rafi L. Muhanna, Robert L. Mullen and Hao Zhang
Interval Finite Elements as a Basis for Generalized Models of Uncertainty in Engineering Mechanics
- 2:00 - 4:00 Discussion, future plans, recommendations and workshop closing