

# NDEMB Program Monday, May 20th

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**8:30–8:50 Registration and Coffee**

**8:50–9:00 Opening Remarks**

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## Morning Session I. Chair: Martin Golubitsky

**9:00–9:40 Globally Coupled Oscillator Networks**

Philip Holmes, Program in Applied and Computational Mathematics, Princeton University.

**9:40–10:20 Statistical Characterization of Disordered Materials.**

S. N. Coppersmith, Department of Physics, University of Wisconsin-Madison.

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**10:20–10:35 Coffee Break**

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## Morning Session II. Chair: Barbara L. Keyfitz

**10:35–10:55 Breakup of Viscoelastic Liquid Jets under Surface Tension**

Michael Renardy, Department of Mathematics, Virginia Tech.

**11:00–11:20 Equi-integrability Results for 3D-2D Reduction Problems**

Marian Bocea, Department of Mathematical Sciences, Carnegie Mellon University.

**11:25–11:45 Global Bifurcation Branches of Neumann Boundary Value Problems**

Junping Shi, Department of Mathematics, College of William and Mary.

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**11:45–1:10 Lunch**

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## Afternoon Session I. Chair: Andrea L. Bertozzi

**1:10–1:50 Architecture and Dynamics of the Primary Visual Cortex**

David W. McLaughlin, Courant Institute, New York University.

**1:50–2:30 Faraday Wave Pattern Formation**

Mary Silber, Dept. of Engineering Sciences and Applied Mathematics, Northwestern University.

**2:40–3:20 Resonant Patterns in a Chemical Reaction-Diffusion System**

Anna L. Lin, Physics Department, Duke University.

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**3:20–3:40 Tea**

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## Afternoon session II. Chair: M. Gregory Forest

**3:40–4:20 Theory and Application of Initial-Boundary-Value Problems for Nonlinear Dispersive Waves**

Jerry L. Bona, Mathematics Department, University of Illinois, Chicago.

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**5:00–7:30 Poster Session and Reception**

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**Tuesday, May 21st**

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**8:30–9:00 Conference Group Photo and Coffee**

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**Morning session I. Chair: Michael Shearer**

**9:00–9:40 Analytic Consequences of Incompressibility**

Stuart S. Antman, Department of Mathematics, University of Maryland.

**9:40–10:20 The Euler-Lagrange Equation and Minimizers in Elastostatics**

John M. Ball, Mathematical Institute, Oxford.

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**10:20–10:35 Coffee Break**

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**Morning session II. Chair: Robert P. Behringer**

**10:35–10:55 Directed Force Chain Networks and Stresses in Granular Materials**

Joshua Socolar, Physics Department, Duke University.

**10:55–11:15 Instability of Local Deformations of an Elastic Rod**

S. Lafortune, Department of Mathematics, University of Arizona.

**11:20–11:40 Solid Cavitation**

M. Ben Amar, Laboratoire de Physique Statistique, Ecole Normale Supérieure, Paris.

**11:40–12:00 Effective Acoustic Models of Porous Media**

A. Panchenko, Department of Mathematics, Penn State University.

**12:00–12:20 Wave Equations under Strong Constraining Forces**

Chongchun Zeng, Department of Mathematics, University of Virginia.

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**12:20–1:30 Lunch**

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**Afternoon session. Chair: Lawrence N. Virgin**

**1:20–2:10 The Axially-Compressed Cylinder: A Exemplar for Buckling and Bifurcation**

G. W. Hunt, Department of Mechanical Engineering, University of Bath.

**2:10–2:50 A Model of Blood Flow through the Abdominal Aorta after Endovascular Repair**

Suncica Canic, Department of Mathematics, University of Houston.

**3:00–3:40 Growth and Dynamics of Filamentous Microorganisms**

Alain Goriely, Department of Mathematics, University of Arizona.

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**3:40–4:00 Tea**

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**4:00–5:30 Lab Tours**

**6:30–11:00 Banquet**

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Wednesday, May 22nd

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8:30–9:00: Coffee

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**Morning Session I. Chair: Julian Wu**

**9:00–9:40 Averaging in Temporally Varying Flows and the Homogenization of Gravity Currents in Porous Media**

Richard M. McLaughlin, Department of Mathematics, UNC Chapel Hill.

**9:40–10:20 Simulation-Based Risk Management of Data for Rapid Mass Flows**

E. Bruce Pitman, Department of Mathematics, University at Buffalo.

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10:20–10:35 Coffee Break

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**Morning Session II. Chair: Suncica Canic**

**10:35–10:55 The Use of Computers in Proving Theorems in Differential Equations**

Joseph D. Fehribach, Mathematical Sciences Department, WPI.

**10:55–11:15 Kinematics of Growing Curves: Models of Fungal Hyphae** Gyorgy Karolyi, Program in Applied Mathematics, University of Arizona.

**11:20–11:40 Central-Upwind Schemes for Systems of Balance Laws**

Alexander Kurganov, Department of Mathematics, Tulane University.

**11:40–12:00 Decay of Solutions to Nonlinear Parabolic Equations: Renormalization Group and Analysis Methods**

Huseyin Merdan, Department of Mathematics, University of Pittsburgh.

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12:00–1:10 Lunch

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**Afternoon session I. Chair: Thomas P. Witelski**

**1:10–1:50 The Blob Projection Method for Fluid/Interface Computations**

Ricardo Cortez, Mathematics Department, Tulane University.

**1:50–2:30 On Various Numerical Issues in Plasticity**

Pierre A. Gremaud, Department of Mathematics, North Carolina State University.

**2:40–3:20 Singular Shocks in a Two-Fluid Model for Bubbly Flows**

Barbara Lee Keyfitz, Department of Mathematics, University of Houston.

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3:20–3:40 Tea

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**Afternoon session II. Chair: M. Gregory Forest**

**3:40–4:20 Nonlinearly Dispersive Water Waves**

Roberto Camassa, Department of Mathematics, UNC Chapel Hill.

**4:20–5:00 The Forced Van der Pol Equation Revisited**

J. Guckenheimer, Department of Mathematics, Cornell University.

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Conference closes

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