

The American Mathematical Society  
Presents the

# von Neumann Symposium

## Multimodel and Multialgorithm Coupling for Multiscale Problems

# Snowbird, Utah

## July 4–7, 2011



Many important applications in both science and technology are characterized by having interactions among various phenomena or components with dissimilar structures and occurring over a broad range of length and time scales. These classes of problems require innovative approaches spanning a large range of scales. In this regard, multimodel and multialgorithm methods have emerged as promising new directions. A defining characteristic of these approaches is that rather than using a single formulation for a problem, they utilize distinct models and algorithms, each appropriate to a particular scale. Multimodel and multialgorithm methods are powerful tools, however the mathematical and numerical analysis required for successfully combining models or coupling algorithms can be as complicated as the analysis of the individual models and algorithms themselves.

By their nature, multiscale problems are highly interdisciplinary so multimodel and multialgorithm methods are being developed in a variety of contexts and disciplines. This symposium will bring together applied mathematicians and scientists from a variety of application areas to discuss current practices and future research directions in the design of hybrid methodologies for multiscale phenomena. In addition, the mathematics community will have the opportunity to meet with applications specialists to identify some of the key mathematical ideas that transcend particular applications. Overall, the symposium should serve as a focal point for assessing the state of the art and articulating important future research directions.

### Plenary Speakers

**Aleksandar Donev**

*Courant Institute, New York University*

**Weinan E**

*Princeton University*

**Nicolas Hadjiconstantinou**

*Massachusetts Institute of Technology*

**George Karniadakis**

*Brown University*

**Rupert Klein**

*Freie Universität, Berlin*

**Petros Koumoutsakos**

*ETH Zurich*

**Tinsley Oden**

*The University of Texas at Austin*

**George Oster**

*University of California, Berkeley*

### Organizers

**John B. Bell (chair)**

*Lawrence Berkeley National Laboratory*

**Alejandro L. Garcia**

*San Jose State University*

**Francis J. Alexander**

*Los Alamos National Laboratory*

### Application Process

Participation in this program is limited. Visit [www.mathprograms.org](http://www.mathprograms.org) to apply for an invitation and to request limited support funds. All requests will be reviewed and considered by the organizing committee. **Application deadline is February 1, 2011.**

Letters of invitation with specific offers of support (if applicable) will be emailed in late February, along with further information on travel and accommodations at Snowbird. All individuals who apply will be notified of the decision as to acceptance or declination before **March 1, 2011.**

If you have questions regarding applications, please contact the AMS at [meet@ams.org](mailto:meet@ams.org).