



Institute for Pure and Applied Mathematics
University of California, Los Angeles presents

Multiscale Geometry and Analysis in High Dimensions

Workshop II: Multiscale Geometry in Scientific Computing

October 19 - 23, 2004

Members of the Organizing Committee include **Emmanuel Candes**, Chair (Caltech), **Gregory Beylkin** (University of Colorado, Boulder), **Rafail Ostrovsky** (UCLA) and **Guillermo Sapiro** (University of Minnesota)

Workshop II: Multiscale Geometry in Scientific Computing is part of an active program of research activities, seminars and workshops throughout the **September 7 - December 17, 2004** period and core participants will be in residence at IPAM continuously for these thirteen weeks. The program will open with tutorials, and will be punctuated by 5 major workshops and a culminating workshop at UCLA's Lake Arrowhead Conference Center. Several distinguished senior researchers will be in residence for the entire period. Between the workshops there will be a program of activities involving the long-term and short-term participants, as well as visitors.



Scientific Overview:

Clever representation of scientific and engineering computations can make previously intractable computations tractable. A whole host of new multiscale representations has been proposed in recent years, each adapted to a special setting, ranging from n-body simulations, to electromagnetics and potential calculations to wave equations and thin-shell simulations.

This workshop is centered around two main themes: (1) the design of multiscale representations of operators allowing the speed up of fundamental computations and (2) the development of probabilistic and geometric tools allowing efficient matching and searching in high-dimensions. A higher goal of this workshop is to show how each area can be influenced by accomplishments in the other, and influence in turn, progress in multiscale computations, and scientific and engineering computations in general.

Semester Program Schedule:

Tutorials: September 8 – 11; September 13 – 15, 2004

Workshop 1: September 20 – 24: Multiscale Geometry in Image Processing and Coding

➤ **Workshop 2: October 19 – 23: Multiscale Geometry in Scientific Computing**

Workshop 3: October 25 – 29: Multiscale Structures in the Analysis of High-Dimensional Data

Workshop 4: November 8 – 12: Multiscale Geometric Methods in Astronomical Data Analysis

Workshop 5: November 15 – 19: Mathematical Analysis and Multiscale Geometric Analysis

Participation:

Financial support for this workshop is available for participants at all academic levels, and recent PhD's, graduate students, and researchers in the early stages of their career are especially encouraged to apply. An online application for support is available at <http://www.ipam.ucla.edu/programs/mgaws2>. Encouraging the careers of women and minority mathematicians and scientists is an important component of IPAM's mission and we welcome their applications. Applicants who are interested in becoming core participants and participating in the semester program (September 7 - December 17, 2004) should apply at <http://www.ipam.ucla.edu/programs/mga2004>.

Please visit our website at

<http://www.ipam.ucla.edu/programs/mgaws2>

or email questions to mgaws2@ipam.ucla.edu

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