

## Workshop on Variational and Viscosity Methods in Partial Differential Equations

Department of Mathematics, The University of Texas at Austin

April 17 - 20, 2002

**Organized by Xavier Cabré and Luis Caffarelli**

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### List of Speakers

Luigi Ambrosio, Henri Berestycki, Italo Capuzzo-Dolcetta, Maria J. Esteban, Nassif Ghoussoub, Changfeng Gui, Francois Hamel, David Jerison, Denis Labutin, Yanyan Li, Fang-Hua Lin, Regis Monneau, Nikolai Nadirashvili, Jean-Michel Roquejoffre, Lihe Wang.

The meeting will be devoted to both variational and viscosity methods for PDEs, with special emphasis on some recent works that combine both tools or that study classical variational questions in the framework of nonvariational equations. Concrete topics for semilinear, quasilinear and fully nonlinear equations will include: phase transitions, front propagation, symmetry properties, equations in periodic media, and optimal transport problems.

This meeting is partially supported by the Harrington Faculty Fellows Program, which was made possible by a gift from Sybil Harrington and The Don and Sybil Harrington Foundation. We also thank TICAM for its support.

It would be our pleasure to have you come to our institution and hear the lecturers above. If you will be attending, we need to know this in advance, so please email the Conference Secretary Amy Green Padgett at [amyg@math.utexas.edu](mailto:amyg@math.utexas.edu).

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### Program and conference rooms

The meeting will take place at conference rooms located on the campus of The University of Texas at Austin. Click on each room in the program below to obtain its location and a map of the area. All the conference rooms are within walking distance from the math department, which is located in the [RLM](#) building (at Speedway and 26th St.)

**WEDNESDAY April 17.** All talks on this day are in room [ACES 6.304](#) (located at Speedway and 24th St.)

**2:00-2:50 pm. (\*) Luigi Ambrosio** (Scuola Normale Superiore di Pisa):

Existence and stability results in L1 theory of optimal transportation

**3:10-4:00 pm. Francois Hamel** (Universite Aix - Marseille III):

Variational principles and applications to some propagation phenomena in periodic media

(\*) There will be inagural speechs given by Dean Mary Ann Rankin of the College of Natural Sciences and Provost Sheldon Ekland-Olson.

**THURSDAY April 18.** All talks on this day are in room [NOA 1.124](#) (located at Wichita and 27th St.)

**9:00-9:50 am. Changfeng Gui** (University of Connecticut):

Recent progress on a conjecture of De Giorgi

**10:10-11:00 am. Denis Labutin** (ETH - Zentrum, Zurich):

Potential theory estimates for semilinear elliptic equations

**11:20-12:10. Henri Berestycki** (Ecole des Hautes Etudes en Sciences Sociales, Paris):

Propagation of fronts in periodic media

**Lunch**

**2:00-2:50 pm. Nikolai Nadirashvili** (University of Chicago):

Isoperimetric inequalities for the second eigenvalue of a sphere

**3:10-4:00 pm. Regis Monneau** (Ecole Nationale des Ponts et Chaussees, CERMICS):

One-dimensional symmetry and fully non linear elliptic equations

**FRIDAY April 19.** All talks on this day are in room [NOA 1.126](#) (located at Wichita and 27th St.)

**9:00-9:50 am. Maria Esteban** (Universite Paris Dauphine):

About some new homogeneous and non homogeneous Hardy inequalities

**10:10-11:00 am. Lihe Wang** (University of Iowa):

Estimates for degenerate equations and applications

**11:20-12:10. Jean-Michel Roquejoffre** (Universite Paul Sabatier, Toulouse):

Mathematical justification and qualitative properties of a class of asymptotic models for spherical flames

## Lunch

**2:00-2:50 pm. Yanyan Li** (Rutgers University):

Extensions to a theorem of Jörgens, Calabi, and Pogorelov

**3:10-4:00 pm. Nassif Ghoussoub** (Pacific Institute, Vancouver):

Elliptic equations with singular potentials

**SATURDAY April 20.** All talks on this day are in room [ECJ 1.202](#) (located at 26th St between Speedway and San Jacinto.)

**9:00-9:50 am. Italo Capuzzo - Dolcetta** (Universita Roma La Sapienza):

Hadamard and Liouville type results for fully nonlinear PDE's

**10:10-11:00 am. Fang Hua Lin** (Courant Institute, New York Univ.):

On Faddeev and Skyrme models

**11:20-12:10. David Jerison** (Mass. Inst. of Technology, MIT):

Global energy minimizers for free boundary problems and full regularity in 3 dimensions

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## Travel

Austin is served by the [Austin-Bergstrom International Airport](#). It is not far from the University, and taxi rides should be reasonably priced. [Super-Shuttle](#) is available.

## Accommodations

Participants should make their own arrangements directly with the hotel of their choice. Below are listed several options for lodging arrangements for those who might be outside of the Austin area. Please refer to the "Variational Methods Math Meeting" at both places in order to obtain the special rates.

- Homestead Village. Email: mgr-adt@homesteadhotels.com. Call 512-476-1818 for reservations by March 17th to obtain the rate of \$55 per night.

- La Quinta Capitol: \$79.99 per night plus \$10 parking fee per day if you have a car. Call 1-800-531-5900 to reserve by April 3rd to obtain rate.

Additional nearby locations include

**Days Inn**, 3105 N. IH 35, Austin, TX: 800-725-7666 or 512-478-1631; 3/4 mile to campus.

**Doubletree Guest Suites**, 303 W 15th Street, Austin TX; 800-222-8733 or 512-478-3562 or 512-478-7000; 3/4 mile to campus.

This rather complete listing of [area accommodations](#) may be useful.

### **Food Service**

There are a number of [restaurants](#) in the general area.

### **Local Information**

Visit the Web sites maintained by the [Department of Mathematics](#), the [city of Austin](#), the [Convention Bureau](#), the transport authority [Capital Metro](#), as well as <http://www.austinlinks.com/>, <http://austin.citysearch.com/>, and <http://www.auschron.com/>. Maps of the University, pictures of the buildings, schedules and maps for the University buses can be obtained from [here](#).

Here is some information on people and activities in Partial Differential Equations of the various [University of Texas research groups](#).

### **Weather**

The weather in central Texas is notoriously unstable (especially in the Spring), but it is not extreme. Normally, it should be between 60°F and 80°F. Here is current information about the expected [weather](#) in Austin.