



Montestigliano Workshop 2012

Fast Methods in Scientific Computing

26 March-2 April 2012

Montestigliano, Italy

www.montestigliano-workshop.com

The 5th workshop in Montestigliano, Italy will cover modern computational techniques for very rapidly and accurately solving integral and partial differential equations. Active involvement, close mentoring and tutorial presentations by an invited guest speaker and the organizers will be offered to ensure a lasting impact on the students' doctoral research. The key-note speaker is Prof. Gunnar Martinsson from the University of Colorado at Boulder.

Topic

Fast solvers for elliptic PDEs such as the Laplace and Helmholtz equations have come to form key building blocks in scientific computing. Elliptic PDE's are encountered in the governing equations in many branches of physics, but they also arise in implicit time integration schemes of dynamical systems. While fast methods for such problems have traditionally been based on iterative solvers (e.g. GMRES, multigrid) recent developments have enabled the construction of linear complexity direct solvers which in a single step construct an approximation to the solution operator of the problem. This workshop addresses direct methods that are robust, stable, fast and under certain conditions outperform state-of-the-art iterative methods.

Format

The key-note speaker gives two lectures and provides a set of problems to be solved by the students collaborating in groups. Scientific supervision will be provided by the invited speaker and the organizers. The students will at the end of the workshop present their work and write a short report.

Dates

Activity

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|-------------------|---------------------------|
| February 10, 2012 | Deadline for application |
| March 10-25 | Preparation for workshop |
| March 26 | Arrival of participants |
| March 26-27 | Lecture by G. Martinsson |
| March 27-31 | Group assignments |
| April 1 | Presentations |
| April 2 | Departure of participants |
| May 10 | Submission of reports |

Organizers

Prof. Peter Schmid (LadHyx/École Polytechnique, France), Prof. Francois Gallaire (EPFL, Switzerland), Dr. Fulvio Martinelli (LadHyx, /École Polytechnique, France) and Dr. Shervin Bagheri (KTH Sweden).

Workshop venue

The workshop will take place at the picturesque estate of Montestigliano in the heart of Tuscany. The village of Montestigliano is composed of 18th century buildings, typically of Tuscan architecture. Located 15 km south-west of Siena, it provides a stunning landscape and a stimulating environment for intensive work and relaxation alike.



How to apply

Interested candidates should send a CV and a motivation-letter including a short summary of their research to info@montestigliano-workshop.com by 10th February 2012. Twelve doctoral students will be selected on a competitive basis by a panel review involving the organizers and the guest speaker. Basic knowledge of numerical methods and programming is required. Selected candidates will receive a fellowship, which will cover registration fee and accommodation. Travel costs are not covered.