



GLOBAL INITIATIVE OF ACADEMIC NETWORKS
(GIAN)



Ministry of Human Resource Development
Government of India

UNIVERSITY OF MUMBAI DEPARTMENT OF MATHEMATICS

FREE BOUNDARY PROBLEMS OF OBSTACLE TYPE, October 23-27 2017



Professor Henrik Shahgholian
KTH Sweden

Professor Henrik Shahgholian is full Professor at the Royal Institute of Technology (KTH) Sweden and is a leading expert in field of free boundary problems, particularly interested in the study of regularity of free boundaries. He has more than 80 publications and has written AMS graduate text titled "Regularity of Free boundaries" with N. Uraltseva and A. Petrosyan.

More details at <https://people.kth.se/~henriksh/>

Professor Jyotshana V. Prajapat (Host Faculty)
Department of Mathematics, University of Mumbai

Dr. J.V. Prajapat is Professor and Head of Department of Mathematics, University of Mumbai. Her research interests are in Geometric Analysis, PDE and Differential Geometry.

More details at Department of Mathematics website under www.mu.ac.in

Overview

Many problems in physics, industry, finance, biology, and other areas can be described by partial differential equations defined on a domain which is a priori unknown. These sets gives rise to interfaces, moving boundaries, shocks, etc. These sets are known as free boundaries.

One tries to solve such partial differential equations by imposing additional conditions on the free boundary, besides the standard conditions ensuring the existence of the solution. The solution to such a problem is to find a function in a suitable function space solving the PDE as well as the domain on which this PDE is satisfied. While one aspect of the theory is existence of solution, a more interesting and challenging aspect from point of view of applications is the study of regularity properties of the free boundary.

Module (A) : Study of functionals associated to

- Classical obstacle problem
- Problem of harmonic continuation of potentials
- Problems in super-conductivity
- Two membrane problem

Module (B) : Regularity for the solutions to the obstacle problem as well as the related problems.

This is a great opportunity to learn from an expert and we encourage students (M.Sc., Ph.D., B.tech, M.tech-interdisciplinary), faculties (Academic, Research and Technical institutions) and industry personnels (Executives and researchers from manufacturing, service, and government organizations including R &D laboratories) to make the most of it.

Registration Fees :

- Students : Rs. 2000/-
- Faculty from Colleges/ Universities : Rs. 5000/-
- Industry/ Research Organizations : Rs. 10000/-
- Participants from abroad : US \$500.

The above fee include all instructional materials. Outstation participants may be provided with single bed/sharing accommodation on request, depending on the availability, on payment basis. Request for hostel accommodation may be submitted by sending a mail along with the registration form to

gian_math@mu.ac.in

Mode of Payment:

Demand Draft in favor of
**"FINANCE AND ACCOUNTS OFFICER,
UNIVERSITY OF MUMBAI"**
payable at Mumbai.

The Demand Draft is to be sent to the Course Coordinator at the address mentioned below.

Contact:

Dr. Jyotshana V. Prajapat
Professor and Head
Department of Mathematics,
University of Mumbai, Vidyanagari, Kalina
Santacruz (E), Mumbai-400098, India
Phone: +91-22-26523349
E-mail: head@mathematics.mu.ac.in