

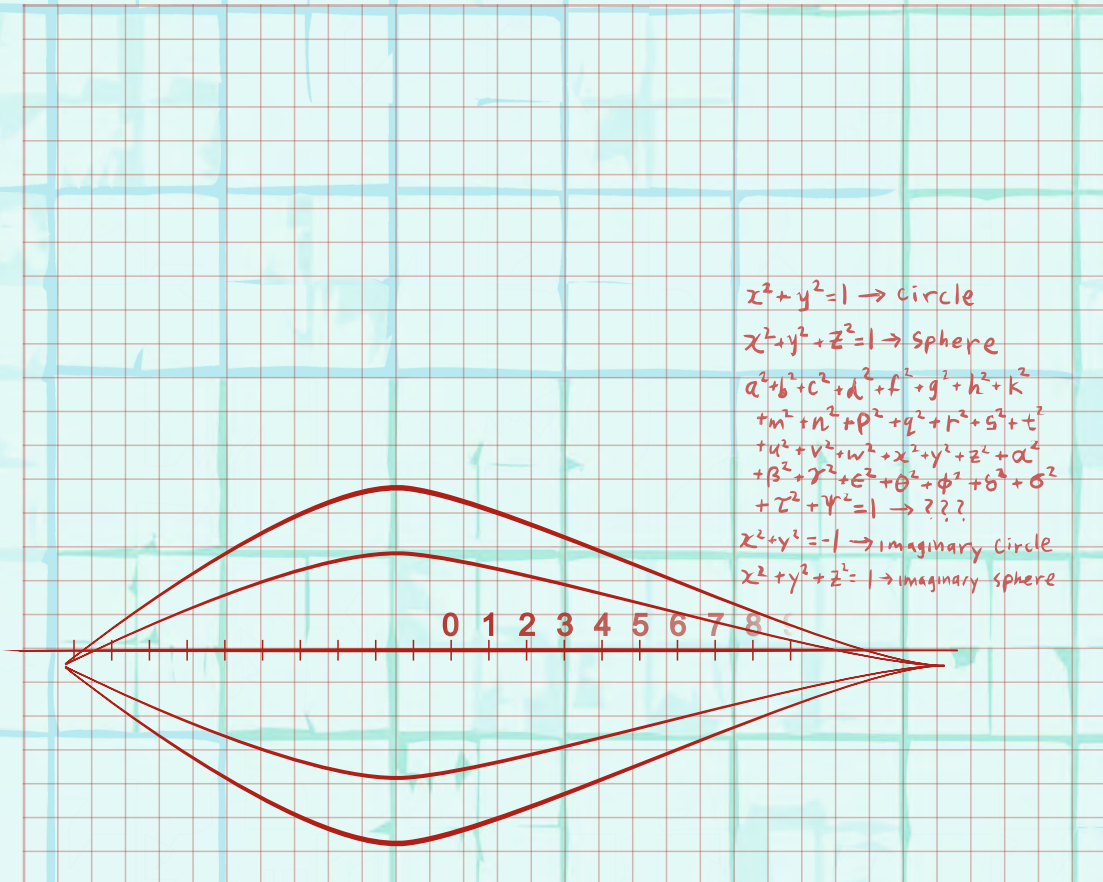


IIT Gandhinagar

WORKSHOP ON

VARIATIONAL ANALYSIS AND OPTIMIZATION

WITH APPLICATIONS TO PDEs



A workshop is planned to be organized at IIT Gandhinagar during the period April, 1-4, 2011. The main aim of this workshop is to systematically expose the students of applied mathematics, physics and engineering to the basic underlying tools and methods of modern variational analysis and optimization in infinite dimensional spaces together with applications to PDEs. The target audience for this workshop is expected to consist of graduate students, young faculty and researchers in science, engineering and allied fields, as well as industry persons interested in getting exposed to the modern tools of *applicable analysis*.

Workshop Overview

The following are some of the topics that will be mainly emphasized:

- ✦ Survey of direct methods in variational analysis with applications to the classical problems of Dirichlet, Neumann and Stokes;
- ✦ Weak solution methods in variational analysis: test functions, distribution theory, weak convergence, weak topology, etc;
- ✦ Basic abstract variational principles, the topological ingredients: lower semi-continuity, inf-compactness, coercivity, etc;
- ✦ General differential calculus of distribution theory, the classical Sobolev spaces;
- ✦ Convex variational analysis and optimization;
- ✦ Optimal controls;
- ✦ Well-posedness, regularization and viscosity solutions of variational problems;
- ✦ Inverse problems;
- ✦ Approximate solutions in variational analysis: finite element method and spectral analysis methods;

Faculty/Resource Persons and Program

It is envisaged that the program will consist of 8-10 invited expository addresses of 1 hour duration each in each of the above mentioned topics by eminent academicians from reputed institutions and research organizations. A few invited expository talks of $\frac{1}{2}$ hour duration as well as some interactive/discussion sessions with the participants will also be planned. The following is the tentative list of faculty for the workshop:

Joydeep Dutta, IIT Kanpur (*optimization in infinite dimensions*)

Kishore Kumar, Max Planck Institute for Mathematics in Sciences, Leipzig, Germany (*finite element method and spectral analysis method*)

Mallikarjun Rao, IEOR group, IIT Bombay (*optimization*)

V. Raghavendra, IIT Kanpur (*PDEs*)

Mythily Ramaswamy, TIFR Centre for Applicable Mathematics (CAM), Bangalore (*variational analysis and PDEs*)

M.T. Nair, IIT Madras (*inverse problems*)

D.V. Pai, IIT Bombay and IIT Gandhinagar (*convex variational analysis, well-posedness and regularization in variational analysis*)

A.K. Pani, IIT Bombay (*PDEs and numerics of PDEs*)

Prashanth K. Srinivasan, TIFR Centre for Applicable Mathematics (CAM), Bangalore (*variational analysis and PDEs*)

Jagmohan Tyagi, IIT Gandhinagar (*PDEs*)

Advisory Committee

- ✦ S. Kesavan, IMSC, Chennai
- ✦ V. D. Sharma, IIT Bombay
- ✦ P. C. Das, NISER, Bhubaneswar, Orissa
- ✦ S. Bhatt, Sardar Patel University, Vallabh Vidhyanagar, Anand, Gujarat

Organizing Committee

- ✦ D.V. Pai, IIT Bombay, and IIT Gandhinagar (Convener)
- ✦ A.K. Pani, IIT Bombay
- ✦ V. Raghavendra, IIT Kanpur
- ✦ Mythily Ramaswamy, TIFR Centre for Applicable Mathematics (CAM), Bangalore and IIT Gandhinagar (Co-Convener)
- ✦ J. Tyagi, IIT Gandhinagar (Secretary)
- ✦ N. Ladhawala, IIT Gandhinagar

Expected Financial Support for the Workshop

Department of Science and Technology (DST) and the National Board for Higher Mathematics (NBHM) are being approached for partial funding of this workshop.

Registration Fee

The Guest Faculty will not be charged any registration fee. However, registration fee of Rs. 1,000 will be charged to the participants to cover the program kit, working lunch and snacks during the workshop period. Registration fee is required to be paid by a demand draft/ cheque in favour of "IIT Gandhinagar, Project and Consultancy Account", payable at Ahmedabad.

Application Procedure

The attached registration form, duly filled in, along with the registration fee must be sent to:

Dr. J. Tyagi

Secretary, Workshop on *Variational Analysis and Optimization*

IIT Gandhinagar, VGEC Campus, Chandkheda

Ahmedabad-382424

E-mail: jtyagi@iitgn.ac.in

Phone:08401628262

The registration form can also be downloaded from the institute web-site:

www.iitgn.ac.in

Last date of receipt of registration form : February 25, 2011

Information of selection (by email/phone) : March 04, 2011

Registration for workshop : April 1, 2011, 9:00-9:30 hrs.

The registration through email will be considered only after receipt of registration fee.