A 10-Day Gian Course on Hydrodynamic Stability and Dynamo Theory

9-20, December 2016

at Department of Mathematics, National Institute of Technology Warangal, Warangal

Mohd. Asif, Govt. of India has launched an innovative program titled "Gian Initiative of Academic Networks" in Higher Education, in order to garner the best international expertise into our system. As a part of this, internationally renowned Academicians and Scientists are invited to augment the country's academic resources, accelerate the pace of quality reforms and elevate India's scientific and technological capacity to global excellence.

Overview of the course

In line with Gian initiative, it is proposed to conduct a course, related to recent astrophysical and geophysical problems, which is very attractive to applied mathematicians. Sophisticated mathematical approaches applying wide spectra of numerical as well as analytic and asymptotic methods are necessary for successful and effective solutions of those physical problems. The first goal of the course is to motivate mathematicians to solve complex physical problems. Therefore, the course indicates an attractiveness and practical usefulness of topics related to the magnetic fields generation of cosmic bodies, in particular of the Earth and Sun. Understanding and the ability to predict the time behaviour of the last two fields has also enormous practical significance, and it is not yet solved. The second goal is to show how various branches of mathematics are indispensable in solving the problems of Convection and Dynamo Theory in astrophysics and geophysics. The third goal is to introduce the basic physical background for the topics with emphasis on mathematical expression of this physics, i.e. to underline the correspondence between the physics and mathematics of the topics.

The course will benefit the students of undergraduate and postgraduate levels, and academicians with background of mathematics and physics to acquire a new experience to apply mathematical methods in attractive physical problems. At the end of the course the participant can able to work on the open research problems related to the course.

About International Faculty: Prof. Brestenský Jozef

Prof. J. Brestenský is from Faculty of Maths, Physics and Informatics (FMPI) in Comenius University (CU), Bratislava, Slovakia. He contributed his research knowledge in different departments of CU such as Astronomy, Physics of the Earth and Meteorology, General Physics, Geomagnetism and Magneto-hydrodynamics, and Natural Sciences. His research interests include Geophysics, Geophysical Fluid Dynamics, Dynamo Fields, Magnetohydrodynamics, Magnetic Fields, Magnetohydroconvection, Cosmic Magneto-hydrodynamics, Solar Physics, physics of everyday life and applied mathematics. He contributed has vast knowledge in the prestigious scientific committees in different positions. He has been invited by the different prestigious universities, to name a few, Cambridge University, University of Hyderabad and NIT-Warangal.

Modules

- Foundations of Magneto hydrodynamics (MHD).
- Dynamics of Rotating Fluids.
- Rotating Magnetohydroconvection (RMC), Linear and Nonlinear Models of RMC, Waves in rotating MHD Systems, Numerical modeling in RMC
- Dynamo Theory: Numerical Simulations of Dynamos, Natural Dynamos.

How to register?

Stage – 1: Web (Portal) Registration: Visit Gian Website http://www.gian.iitkgp.ac.in/CRB2/index and create your login User ID and Password. After the blank registration form and do web registration by paying Rs.500/- online through Net Banking/Debit/Credit card. This provides him/her with life time registration to enroll in any of the Gian courses offered.

Stage – 2: Course Registration (Through Gian Portal): Log in to the Gian portal with the user ID and Password created in stage 1. Click on “Course Registration” option given at the top of the registration form. Select the course titled "Hydrodynamic Stability and Dynamo Theory" from the list and click on “Save” option. Confirm your registration by clicking on "Confirm Course". After receiving the course participation mail from the coordinator pay the registration fee as mentioned below:

Registation Fee (Excluding Lodging & Boarding)

| Students and Research Scholars | Rs. 2,000/- |
| Faculty & Scientists | Rs. 4,000/- |
| Participants from Industry/Training Organizations/Consultancy Firms | Rs. 8,000/- |
| Student Participants from Abroad | USD 100 |
| Other Participants from Abroad | USD 200 |

The registration fee includes instructional materials, tutorials and computer use, free internet facility, working lunch, mid-seasons tea & snacks. Outstation participants requiring boarding and lodging have to pay extra in addition to the registration fee.

About National Institute of Technology, Warangal

National Institute of Technology (formerly Regional Engineering College), Warangal (NITW) was established in the year 1959. There are 14 academic Departments offering 8 undergraduate and 29 post-graduate programs besides doctoral programs. About 9,500 students from the country and 500 international students pursue their education in the campus. It is a fully residential campus spanning over 280 acres with excellent infrastructure in the form of state of art library, seminar halls, guest houses and laboratories.

http://www.nitw.ac.in/media/uploads/HS_DT_Brochure_2.pdf