



Indian Institute of Space Science and Technology  
Thiruvananthapuram



## Advanced Workshop on Homogenization *under*

National Programme on Differential Equations  
Theory, Computation and Applications (NPDE-TCA)  
(Supported by DST)

December 9 - 14, 2013

Department of Mathematics at the Indian Institute of Space Science and Technology is organizing an Advance level workshop on Homogenization from December 9-14, 2013 under the auspices of National Programme on Differential Equations: Theory, Computation and Applications (NPDE-TCA).

In many physical problems several scales are present, caused by inhomogeneity of the medium or complexity of the mechanical process. A fundamental approach is to first construct micro-scale models, and then deduce the macro-scale laws and the constitutive relations by properly averaging over the micro-scale. This process of establishing the macroscopic behaviour of a system from the microscopically heterogeneous system is called homogenization and the objective of this workshop is to introduce various techniques of homogenization to the participants.

### Main Topics:

Asymptotic expansion, compensated compactness, homogenization of optimal control problems, gamma convergence and applications, two scale convergence, method of unfolding, Block wave methods and numerics for homogenization.

### Target Audience:

Research scholars, postdoc fellows and young faculty members who works in the area of partial differential equations and related topics.

**Patron:** K. S. Dasgupta (Director, IIST)

**Chair:** Raju K. George (Head, Department of Mathematics, IIST)

**Convenor:** N. Sabu (IIST)

### Resource Persons:

A. K. Nandakumaran (IISc Bangalore), M. Vanninathan (TIFR Bangalore), Amiya K. Pani (IIT Bombay), N. Sabu (IIST Trivandrum), S. Sivaji Ganesh (IIT Bombay), T. Muthukumar (IIT Kanpur)

### Organizing Committee:

N. Sabu (IIST), A.K. Nandakumaran (IISc Bangalore), Amiya K. Pani (IIT Bombay), T.G. Deepak (IIST), C. V. Anil Kumar (IIST), K.S.S. Moosath (IIST), E. Natarajan (IIST), Kaushik Mukherjee (IIST), Sarvesh Kumar (IIST), Prosenjit Das (IIST), Sumitra S. Nair (IIST), K. Sakthivel (IIST)

### Participation:

To participate in this workshop, fill in the required form which can be downloaded from the website <http://www.math.iitb.ac.in/~npde-tca> and email to [homgn.iist@gmail.com](mailto:homgn.iist@gmail.com). Also send the signed form along with CV and recommendation letter(s) to the contact address.

### Contact:

Dr. N. Sabu (IIST), Department of Mathematics, IIST, Trivandrum, Valiamala (P.O), 695 547.

*email:* [sabu@iist.ac.in](mailto:sabu@iist.ac.in) , *phone:* 0471-2568513

*Last date for receiving the application is 18.10.2013.*

*Selection of participants will be based on their academic records and recommendation.*

*List of selected participants will be put on the webpage [www.iist.ac.in](http://www.iist.ac.in) by 21.10.2013.*