



DAAD Deutscher Akademischer Austauschdienst
German Academic Exchange Service



Indo-German Winter School on

**Optimization of Large and Dynamic Systems
and
Modeling, Discretization, Optimization, & Simulation of
Multi-physics Problems**

**Supported by
DAAD
IIT Indore
LU Hannover**

Dates
10th February – 12th February, 2020

Venue
Scandium 424, IIT Indore

Organizers

Prof. Dr. Marc C. Steinbach, LU Hannover, Germany

Dr. Steinbach is a Professor for Algorithmic Optimization at the Institute of Applied Mathematics of the Leibniz Universität Hannover (Germany). His research interests are in Applied Mathematical Optimization, specifically in developing robust and efficient algorithms and software for important classes of large-scale problems from business and industry. His current emphasis is on optimization of nonlinear network flows with applications in gas distribution and water management, and on multistage stochastic programming with applications in computational finance, energy, and process engineering.



Prof. Dr. Thomas Wick, LU Hannover, Germany

Dr. Wick is a Professor for Scientific Computing at the Institute of Applied Mathematics of the Leibniz Universität Hannover (Germany). Earlier, he completed a postdoc from The University of Texas at Austin (USA) and Ph.D. from Heidelberg University (Germany). His research interests are in Design, Implementation and Analysis of Numerical Methods and Algorithms for Computational Fluid Dynamics, Solids, Multi-physics and Crack Propagation problems in Elasticity and Poro-elasticity. He is also interested in Error Estimation and Adaptive Methods such as local mesh adaptivity with a particular emphasis on goal-oriented techniques.



Dr. Kapil Ahuja, IIT Indore, India

Dr. Ahuja is working as an Associate Professor in Computer Science and Engineering at IIT Indore (India). Earlier, he completed a postdoc from the Max Planck Institute in Magdeburg (Germany) and a Ph.D. from Virginia Tech (USA). Recently, he has been a visiting professor at TU Braunschweig (Germany), TU Dresden (Germany), and Sandia National Labs (USA). His research interests are in Numerical Linear Algebra, Artificial Intelligence, Mathematical Optimization, Computational Biology, and Game Theory.



Registration

Steps to Follow:

The registration fee for the winter school is given below:

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|-----------------------|----------|
| Faculty Registration: | Rs. 5000 |
| Student Registration: | Rs. 2000 |

For more details about registration (and payment of fee), please contact Dr. Rajendra Choudhary.

Email: rajendracse46@gmail.com

Mobile no.: 8109066213

The above fee includes all 24 hours free internet facility as well as lunch for all lecture days.

Training Program Schedule

Duration: 10th February – 12th February, 2020

Lectures Schedule:

| Module A: Optimization of Large and Dynamic Systems | | |
|--|---------------------------------------|--|
| Lectures | Date & Time | Topic |
| Lec-1 | 10 Feb 2020 (10 am to 11 am) | <i>Theory of Smooth Non-linear Optimization.</i> |
| Lec-2 | 10 Feb 2020 (11.15 am to 12.15 pm) | <i>Theory of Non-smooth Non-linear Optimization.</i> |
| Lec-3 | 10 Feb 2020 (2 pm to 3 pm) | <i>Interior Point Methods and KKT Algorithms.</i> |
| Lec-4 | 11 Feb 2020 (10 am to 11 am) | <i>SQP and Active Set Methods.</i> |
| Lec-5 | 11 Feb 2020 (11.15 am to 12.15 pm) | <i>Dynamic Optimization.</i> |

**Module B:
Modeling, Discretization, Optimization, and Simulation of
Multi-physics Problems**

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|--------|---------------------------------------|--|
| Lec-6 | 11 Feb 2020 (2 pm to 3 pm) | <i>Modeling Fluid Flows and Solid Mechanics.</i> |
| Lec-7 | 12 Feb 2020 (10 am to 11 am) | <i>Variational Formulations and Coupling Techniques.</i> |
| Lec-8 | 12 Feb 2020 (11.15 am to 12.15 pm) | <i>Discretization in Time and Space.</i> |
| Lec-9 | 12 Feb 2020 (2 pm to 3 pm) | <i>Non-linear and Linear Solution.</i> |
| Lec-10 | 12 Feb 2020 (3.15 pm to 4.15 pm) | <i>Numerical Simulations and Further Extensions.</i> |