CALDAM 2015, School on Discrete Mathematics
February 05 - 06, 2015

The field of discrete mathematics in all its branches is a rich and continuously evolving area of research. Since computers store data in discrete bits and compute in discrete steps, there is a natural synergy between discrete mathematics and computer science to the extent that the area of discrete mathematics is considered to be foundational for computer science. Today the applications of discrete mathematics forms the foundations of Graph theory, Cryptography, Operations Research, Logic, Computational Geometry, Algorithms, Theoretical Computer Science, Information Theory, and many others. Keeping this in mind this conference was focused on topics related to:

- Efficient algorithms and data structures, their analysis (both theoretical and experimental) and the mathematical problems arising thereof.
- New applications of discrete mathematics, advances in existing applications and development of new tools for discrete mathematics.

This workshop was a jointly organized by TEQIP, IIT Kanpur, TIFR Mumbai and Charles University, Prague. It was organized for PhD students and teachers in computer science and discrete mathematics.

Topics Discussed

- Ramsey-type Results in the Plane
- Decremental All-pairs ALL Shortest Paths
- The Gap between the Chromatic Number and the Distinguishing Chromatic Number
- Set Membership with a Few Bit Probes
- Hanani-Tutte Theorem and its Applications
- Extending Partial Geometric Representations of Graphs
- Weighted Independent Sets in Graph Classes
- Betweenness in an Axiomatic Approach in Graphs
- Extending Partial Geometric Representations of Graphs
- The Beer Index of Convexity and Its Variants
- Oriented Coloring

LIST OF SPEAKERS

- Pavel Valtr, Charles University, Prague
- Jiri Sgall, Computer Science Institute of Charles University
- Meghana Nasre, Indian Institute of Technology Madras
- T. Karthick, Indian Statistical Institute, Chennai Centre, Chennai
- Niranjan Balachandran, Indian Institute of Technology Bombay
- Manoj Changat, University of Kerala, Thiruvananthapuram
- Amitava Bhattacharya, Tata Institute of Fundamental Research, Mumbai
- Jan Kratochvl, Jan Kratochvil, Charles University
- Mohit Garg, Tata Institute of Fundamental Research, Mumbai
- Martin Balko, Charles University
- Martin Tancer, Charles University
- Sagnik Sen, Indian Statistical Institute, Kolkata

PARTICIPATING INSTITUTES

Institute	Number of Participants
Faculty of Engineering and Technology	1
Institute of Engineering and Technology, Lucknow	5
NIT Kurukshetra	1
PEC University of Technology,Chandigarh	2
Kamla Nehru Group of Institutions, Sultanpur	1
NIT Raipur	2
Total	**12**

Workshop Schedule

February 05, 2015

Time	Event
8: 15 AM -9:15 AM	**Registrations**
9:15 AM – 10:30 AM	**Ramsey-type Results in the Plane** *Pavel Valtr*
10:30 AM – 11:00 AM	**Coffee break**
11:00 AM – 11:45 AM	**Decremental All-pairs ALL Shortest Paths** *Meghana Nasre*
11:45 AM – 1:00 PM	**The Gap Between the Chromatic Number and the Distinguishing Chromatic Number** *Niranjan Balachandran*
1:00 PM – 2:00 PM	**Lunch break**

Time	Event
2:00 PM – 3:15 PM	**Matching Theory, Alternating Reachability and Integer Sum of Closed Alternating Trails** *Amitava Bhattacharya*
3:15 PM – 3:45 PM	**Tea break**
3:45 PM – 4:30 PM	**Set Membership With a Few Bit Probes** *Mohit Garg*

February 6, 2015

Time	Event
9:15 AM – 10:30 AM	**Extending Partial Geometric Representations of Graphs** *Jiri Sgall*
10:30 AM – 11:00 AM	**Coffee break**
11:00 AM – 11:45 AM	**Weighted Independent Sets in Graph Classes** *T. Karthick*
11:45 AM – 1:00 PM	**Betweenness in an Axiomatic Approach in Graphs** *Manoj Changat*
1:00 PM – 2:00 PM	**Lunch break**
2:00 PM – 3:15 PM	**Extending Partial Geometric Representations of Graphs** *Jan Kratochvl*
3:15 PM – 3:45 PM	**Tea break**
3:45 PM – 4:30 PM	**On the Beer Index of Convexity and Its Variants** *Martin Balko*

OUTCOME

This workshop exposed the participants to the recent developments in Discrete Mathematics, Algorithms, Combinatorics and Graph Theory. It brought together researchers working in the areas of algorithms and applied discrete mathematics and provided a high-quality forum for the dissemination and discussion of research results in these broad areas. The participants were introduced to new applications of discrete mathematics, advances in existing applications and development of new tools for discrete mathematics.