



DEPARTMENT OF MATHEMATICS UNIVERSITY OF DELHI

INVITED TALK

by

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entitled

Algorithms for Computationally Hard Graph Theoretic Problems

ABSTRACT: A graph is an ordered pair $G = (V, E)$ that comprises V , a set of vertices and a set of edges $E = \{\{x, y\} | x, y \in V, x \neq y\}$. The VERTEX COVER problem asks, given a graph G and an integer k , if there exists $S \subseteq V(G)$ such that $|S| \leq k$ and for every $\{x, y\} \in E$, $x \in S$ or $y \in S$. This is a well-known graph theoretic problem that is computationally hard in the area of algorithms and complexity theory. To cope with this computational hardness, a framework parameterized algorithm was introduced in the year of 1988 and VERTEX COVER is the first problem for which a fixed-parameter algorithm was developed. Furthermore, this graph theoretic problem VERTEX COVER has some natural generalizations, e.g. CONNECTED VERTEX COVER, p -EDGE-CONNECTED VERTEX COVER in the area of graph theory and algorithms. The p -EDGE-CONNECTED VERTEX COVER problem asks if a given graph G has a vertex cover S such that $|S| \leq k$ and the vertex subset S induces a p -edge-connected subgraph. In this talk, we will discuss how to use the well-known Bollobas's Theorem, matroid and related mathematical tools from combinatorics and graph theory to design parameterized algorithms for the p -EDGE-CONNECTED VERTEX COVER problem.



Dr. Diptapriyo Majumdar is a faculty at Indraprastha Institute of Information Technology Delhi. He has done Ph.D. from IMSc Chennai and was a postdoctoral Fellow at Royal Holloway, University of London, UK. His research interests are Algorithms and Complexity, particularly he works in Parameterized Algorithms (also known as multivariate analysis of algorithms). In addition to that, he also has a keen interest in approximation algorithms and algorithms in special classes of graphs.



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3:00 PM



Seminar Room
(Ground floor)

Co-ordinator
Dr. Mrigendra Singh Kushwaha

Prof. Ruchi Das
Head, Department of Mathematics