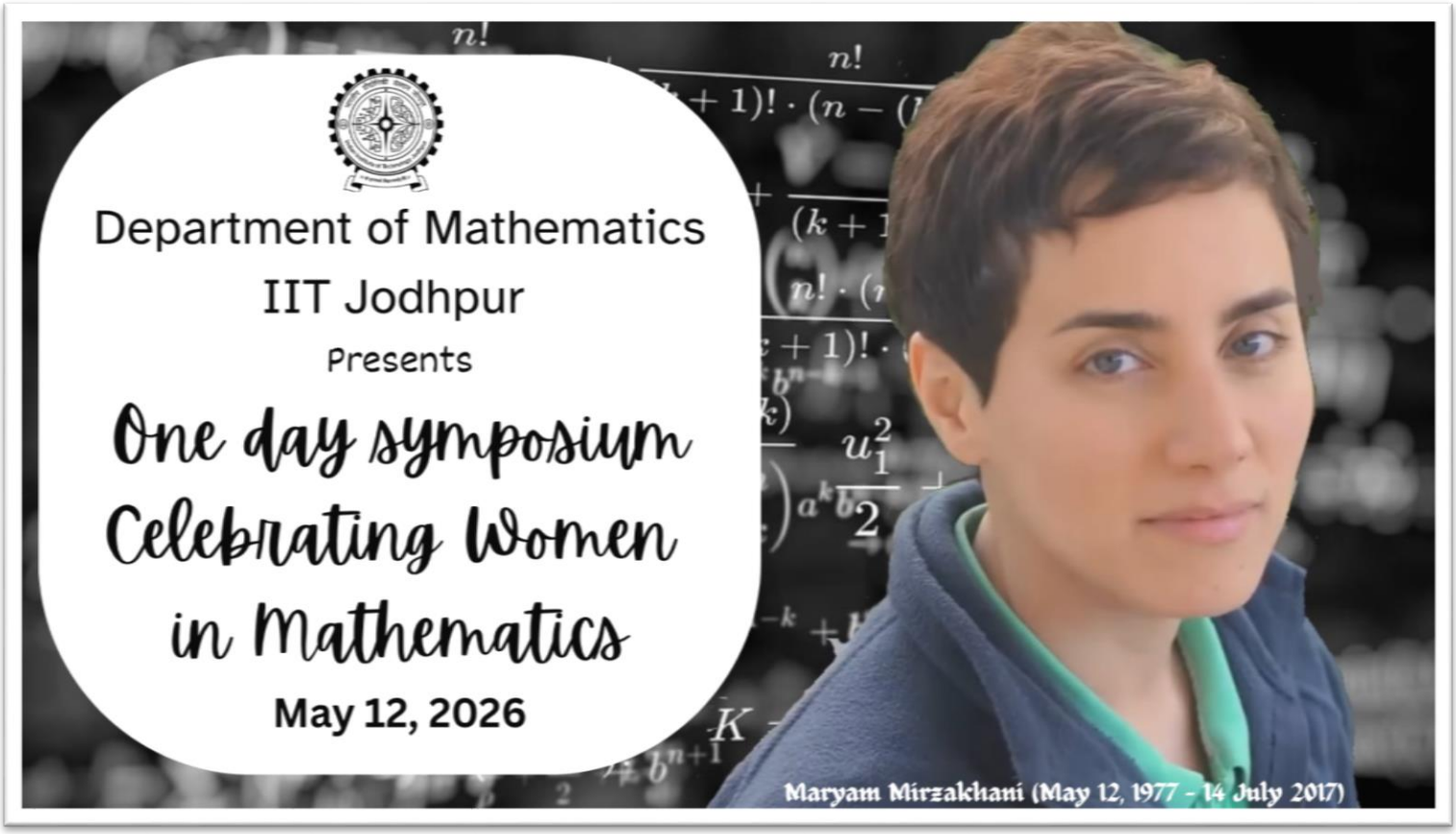

The goal of this event is to increase visibility of women mathematicians and promote gender equality in mathematics. The event is open to all students of science at undergraduate, masters and doctoral level.

Time Table : All times in IST (Indian Standard Time)

Tuesday, May 12, 2026

- **11:30 AM-12:30 PM - Prof. Geetha Venkataraman**
- **2:40 PM- 3:20 PM - Dr. Brahadeesh Sankarnarayanan**
- **3:30 PM-4:10 PM - Dr. Arti Pandey**
- **4:15 PM-4:45 PM - Dr. Kriti Goel**
- **5:00 PM-6:00 PM -Panel Discussion**

Speakers with title of talks:

1. **Dr. Brahadeesh Sankarnarayanan, Indian Institute of Technology Jodhpur.**

Title of the Talk: A Combinatorial Gem of Maryam Mirzakhani: List Colorings of Planar Graphs

Abstract: Maryam Mirzakhani is widely known for her work on the geometry of moduli spaces, for which she became the first woman to be awarded the Fields Medal. Less widely known is that one of her earliest papers, written when she was still a teenager, was in graph theory: a

short and elegant construction settling a question raised by Paul Erdős about list colorings of planar graphs. On the occasion of her birth anniversary, we revisit this beautiful result, and the young mathematician who found it.

2. **Prof. Geetha Venkataraman, Dr. B. R. Ambedkar University Delhi**

Title of the Talk: Non-abelian exponent-critical p-groups.

Abstract: A finite group is said to be exponent-critical if its exponent is not the least common multiple of the exponents of its proper non-abelian subgroups. Exponent-critical groups are solvable and the order of a non-abelian exponent-critical group is divisible by at most three distinct primes. We mention themain results classifying exponent-critical groups when the group is divisible by exactly n-distinct primes where n = 2, 3. In the case of non-abelian exponent-critical p-groups P, the problem naturally splits into two cases, depending on the number of abelian maximal subgroups of P. We say that an exponent-critical p-group P is of type A if P has exactly one maximal subgroup which is abelian, and is of type B if P has more than one abelian maximal subgroup. We will also mention a surprising link that certain exponent-critical p-groups have with a new type of graph defined on a group. The work on exponent-critical groups is joint work with Simon R Blackburn, William Cocke and Andrew Misseldine and the work related to graphs on groups is joint work with Surbhi.

3. **Dr. Kriti Goel, Indian Institute of Technology Jodhpur.**

Title of the Talk: From Coins to Higher Dimensions: A Journey Through Semigroups

Abstract: In the early 1900's, Ferdinand Georg Frobenius raised a problem (called the Diophantine Frobenius Problem or the Frobenius coin problem) to find the largest natural number (called the Frobenius number) that cannot be represented as a non-negative integer combination of a given set of relatively prime positive integers. While the problem may look deceptively specialized, the knowledge of the Frobenius number has proven useful for investigating various problems, despite the fact that computing the number is NP-hard. As folklore goes, the Frobenius problem arose from the theory of semigroups.
One of the widely studied classes of semigroups is numerical semigroups – additive submonoids of natural numbers having a finite complement. Over the past few decades, several applications of semigroup theory have been explored, even beyond various areas of mathematics. In this talk, we will elaborate on these connections and explore the existence of Frobenius elements over higher-dimensional spaces.

4. **Dr. Arti Pandey, Indian Institute of Technology Ropar.**

Title of the Talk: Graph Optimization Problems

Abstract: Graph optimization is an active area of research and many problems of practical application can be modeled as graph optimization problems. In graph optimization, one is interested in the following issues: (i) Given a graph optimization problem, design an efficient algorithm to solve it. However, most of the problems turn out to be NP-hard, and hence it is not possible to solve using a polynomial time algorithm unless P=NP, (ii) Once a problem is known to be NP-hard, one needs to look for special classes of graphs where the problem admits polynomial time algorithms, (iii) If the problem is NP-hard, one needs to design good approximation algorithm and look for the limit of approximability by showing some inapproximation result, (iv) one needs to obtain some structural results which are used in solutions of the above issues and are of independent interests as well. In this talk, we will discuss these aspects for some of the important graph optimization problems on which our group is working recently.

Panel Discussion: Women in Science : Progress and Challenges

Dr. Gaurav Bhatnagar, Department of Mathematics, Indian Institute of Technology Jodhpur.

Dr. Reetanjali Mohrana, Department of Physics, Indian Institute of Technology Jodhpur.

Dr. Kriti Goel, Department of Mathematics, Indian Institute of Technology Jodhpur.

Dr. Sushmita Yadav, Department of Mathematics, Indian Institute of Technology Jodhpur.

(Moderated by Dr. Rajat Gupta, Department of Mathematics, IIT Jodhpur)

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