



SCHOOL OF
MATHEMATICS AND
STATISTICS

UNIVERSITY OF
HYDERABAD

Date : 9 March 2022

Time: 8.30AM IST

Venue : Seminar Hall - I,

Google meet link:

[http://
meet.google.com/wjf-
ovkf-kyx](http://meet.google.com/wjf-ovkf-kyx)



Maryam
Mirzakhani
Memorial Lecture

PROGRESS ON PROGRESSIONS

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Abstract

We meet systems of homogeneous linear equations in high school algebra. They are especially easy to solve when there are more variables than equations. Infinitely many solutions! ... or so we are told. This talk aims to provide a counterpoint. Depending on what equation one is solving or where one is looking for solutions, one may find some, plenty, or none. We will explore the simplest geometric example of such an under-determined linear system, a k -term arithmetic progression, given by $(k-2)$ equations in k unknowns:

$$x_{i+1} - 2x_i + x_{i-1} = 0, \quad 2 \leq i \leq k-1.$$

This example has a long and diverse history, with connections to several areas of analysis, number theory, combinatorics, and geometry. We will look at some of the landmark results in the subject and work out a couple of elementary proofs in real time.

Malabika Pramanik is a professor of Mathematics at University of British Columbia. She received her bachelor's and master's degrees in Statistics from the Indian Statistical Institute, and her PhD in Mathematics from University of California at Berkeley. Before joining UBC in 2006, Dr. Pramanik held positions at University of Wisconsin, University of Rochester and California Institute of Technology.

Dr. Pramanik's research interests cover areas of mathematical analysis, specifically Euclidean harmonic analysis, geometric measure theory and several complex variables. She cares deeply about equity, diversity and inclusion in STEM fields. She is the recipient of many awards, among them UBC's Killam Awards for research and for teaching, the Ruth E. Michler Memorial Prize, and Canadian Mathematical Society's Krieger-Nelson Prize for research excellence. She is a fellow of the CMS and the AMS, and an invited speaker of the International Congress of Mathematicians 2022. Since 2020, she has been the scientific director of Banff International Research Station.

All are welcome