INDIAN STATISTICAL INSTITUTE

Theoretical Statistics and Mathematics Unit, Kolkata

LECTURE

Date: June 15, 2023, Thursday
Time: 04:15 PM

VENUE:

L-infinity

(5th Floor, A.N. Kolmogorov Bhavan), ISI Kolkata

TITLE:

Exponential Maps and The Cancellation Problem

SPEAKER:

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ABSTRACT:

The Zariski Cancellation Problem is a long standing open problem in Affine Algebraic Geometry. The problem in purely algebraic formulation can be stated as follows: For a field K and an affine K-algebra A if

$$A[X] \cong K[X_1, ...X_n, X_{n+1}]$$

then is

$$A \cong K[X_1, X_2, ..., X_n]?$$

There are a few positive answers to this in characteristic zero; for $n = 1$, it was proved by Abhyankar, Eakin and Heinzer. And for $n = 2$, it was proved by Fujita, Miyanishi and Sugie.
But all the other remaining cases in characteristic zero are still open.

In positive characteristic, we have complete answers. For $n = 1$, we have positive answer to the cancellation problem proved by Abhyankar , Eakin and Heinzer. For $n = 2$, we have positive answer proved by Peter Russell for perfect fields and later Bhatwadekar and Gupta proved it for arbitrary field in positive characteristic. However, for each $n \geq 3$, Neena Gupta has shown that there are counterexamples in positive characteristic.
In this talk we will introduce the concept of exponential maps and see its application in the proof of Neena Gupta's result (2014) establishing the counter example to the cancellation problem in positive characteristic for $n = 3$.

ALL ARE CORDIALLY INVITED