Theoretical Statistics and Mathematics Unit
Indian Statistical Institute
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SEMINAR

Date: May 26, 2026
Time: 12:00 PM

VENUE:
L- Infinity (5th Floor, A.N. Kolmogorov Bhavan), ISI Kolkata

SPEAKER:

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TITLE:

On triviality Of $\mathbb{A}^2$-forms admitting a non-trivial $\mathbb{G}_a$-action

ABSTRACT:

Let k be any field. A k-algebra A is said to be an $\mathbb{A}^n$-form with respect to a field extension $L\ |_k$ if $A \otimes_k L = L^{[n]}$ (the polynomial ring in n-variables over L). It is well-known that every separable $\mathbb{A}^2$-form over k is trivial. However, for inseparable field extensions, there exist examples of nontrivial $\mathbb{A}^n$-forms even for $n = 1$.

In this talk, we give a structure theorem for $\mathbb{A}^2$-forms over arbitrary field extensions admitting a nontrivial $\mathbb{G}_a$-action. As a consequence of the structure theorem, we prove that any $\mathbb{A}^2$-form is cancellative, a generalization of the Zariski Cancellation Theorem for the affine plane over an arbitrary field. From the structure theorem we also derive some conditions under which an $\mathbb{A}^2$-form becomes trivial. In particular, we prove that over a field k, a factorial $\mathbb{A}^2$-form having a k-rational point and a non-trivial $\mathbb{G}_a$-action is trivial and we also give examples demonstrating that none of these hypotheses can be discarded.

ALL ARE CORDIALLY INVITED