



INDIAN STATISTICAL INSTITUTE
Theoretical Statistics and Mathematics Unit, Kolkata

SEMINAR

Date: December 13, 2022, Tuesday
Time: 03:00 PM

VENUE:

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

TITLE:

HOMOLOGY OF SYMMETRIC SEMI-ALGEBRAIC SETS

SPEAKER:

Saugata Basu
Purdue University, USA

ABSTRACT:

Studying the homology groups of semi-algebraic subsets of \mathbb{R}^n and obtaining upper bounds on the Betti numbers has been a classical topic in real algebraic geometry beginning with the work of Petrovskii and Oleinik, Thom, and Milnor. In this talk I will consider semi-algebraic subsets of \mathbb{R}^n which are defined by symmetric polynomials and are thus stable under the standard action of the symmetric group \mathfrak{S}_n on \mathbb{R}^n . The homology groups (with rational coefficients) of such sets thus acquire extra structure as \mathfrak{S}_n -modules leading to possible refinements on the classical bounds. I will also mention some algorithmic consequences and connections with a homological stability conjecture.

Joint work (separately) with Daniel Perrucci and Cordian Riener.

ALL ARE CORDIALLY INVITED