

Algebraic Geometry Seminar

Department of Mathematics

Guest Speaker: Teresa Yu

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Lecture Title:

Module theory in infinite-dimensional
equivariant commutative algebra



Date: Thursday, September 10, 2026

Time: 3:30 PM

Location: 258 Hurley Hall

Abstract:

A foundational result in equivariant commutative algebra is Cohen's theorem that the infinite variable polynomial ring $R = \mathbb{C}[x_1, x_2, x_3, \dots]$ is Noetherian up to the action of the infinite symmetric group. This result has led to uniformity and finiteness theorems for finite-dimensional structures in algebraic geometry, statistics, and algebraic topology, and more generally motivates the study of the equivariant commutative algebra of R . In this talk, we will survey the module-theoretic aspects of this field, with particular emphasis on the infinite GL and symmetric group settings. Along the way, we will see how FI-modules, originally introduced in the context of representation stability, provide a useful bridge between finite-dimensional representation theory and infinite-dimensional equivariant algebra.