LMSI Seminar, February 2026

3rd February 3pm to 4pm
Lena Ji
Title : Arithmetic and birational properties of linear spaces on intersections of two quadrics
The linear spaces contained in the base locus of a pencil of quadrics encode a lot of interesting geometry. For example, for pencils of even-dimensional quadrics, there is a deep relationship between these linear spaces and hyperelliptic curves, first observed by Weil. This has found numerous applications, for example, rational points. In this talk, we study rationality questions for the Fano schemes of these linear spaces, especially over non-closed fields. Our main focus is the case of second maximal linear subspaces, and we generalize results of Hassett–Tschinkel, Benoist–Wittenberg, and Hassett–Kollár–Tschinkel. This work is joint with Fumiaki Suzuki.

4th February 3pm to 4pm
Souwik Goswamy
Title : Mixed Hodge structures and heights associated to algebraic cycles
In abstract Hodge theory, Deligne's delta splitting measures how far a mixed Hodge structure is from being split as a real mixed Hodge structure. An allied notion, developed by S. Bloch, R.Hain et al., is that of a height for a special class of mixed Hodge structures called Biextensions. The idea of a Biextension is closely related to algebraic cycles homologous to zero. Given two such cycles in complementary codimensions in an ambient smooth and projective variety, a certain cohomology group associated to the pair provides an example of a Biextension-type mixed Hodge structure. The height associated with such a Biextension has been well studied and has been an active area of research for the past few decades. In an ongoing project with J. I. Burgos Gil and G. Pearlstein, I have developed a theory of mixed Hodge structures and heights associated with Bloch's higher cycles, that generalizes the above study of Biextensions. In the talk, I will review the established theory and explain the current state of the art.

5th Thursday 3pm to 4pm
Olivier Benoist
Title: Tight approximation for rationally simply connected varieties
Abstract: Let B be a compact Riemann surface. A classical theorem of Royden states that any holomorphic map from an open subset of B to $\mathbf{P}^1$ can be approximated by algebraic maps for the compact-open topology. I will show that this result remains true if the target $\mathbf{P}^1$ is replaced by any rationally simply connected variety (e.g. a smooth hypersurface of degree d in $\mathbf{P}^n$ with $n \geq d^2 - 1$). This is joint work with Olivier Wittenberg.

10th February 3pm to 4pm
Charanya Ravi
Title: Localization theorem for algebraic stacks
Abstract: The classical Atiyah-Bott localization theorem in equivariant singular cohomology for spaces with torus action is one of the main computational tools in enumerative geometry. The need to access general parameter spaces (singular and stacky) and the need for refined counts (in other cohomology theories) motivate the need for a general localization theorem. In this talk, we will discuss Atiyah-Bott localization theorem for equivariant cohomology theories of algebraic stacks.