UNIVERSITY AT ALBANY
State University of New York

College of Arts and Sciences
Department of Mathematics and Statistics

Algebra/Topology Seminar

Raj Gandhi
Cornell University

Motivic Segre Classes of Schubert Cells and the Connective Formal Group Law

Thursday, January 29, 2026
3:00 p.m. in Massry B012

Abstract. A longstanding goal of Schubert calculus is to give a positive formula for the structure constants for the Schubert basis in the cohomology ring of the d-step flag variety. This goal can be generalized by replacing "cohomology ring" with "torus-equivariant cohomology ring", "K-ring", and "torus-equivariant K-ring". It can also be generalized in an orthogonal direction by replacing "d-step flag variety" with "cotangent bundle of the d-step flag variety".

Recently, Allen Knutson and Paul Zinn-Justin proved a positive formula in terms of Knutson–Tao puzzles for the structure constants in the basis of motivic Segre classes of Schubert cells in (a localization of) the torus-equivariant K-ring of the cotangent bundle of the Grassmannian. Their proof heavily uses the theory of quantum integrable systems.

In this talk, we will describe a one-parameter deformation of the motivic Segre classes of Schubert cells in the Grassmannian which comes from the so-called "connective formal group law", and we give a positive formula for the structure constants in the basis of deformed classes in terms of Knutson–Tao puzzles. The proof of the puzzle formula involves the representation theory of the multi-parameter quantum group of affine type A.