Seminar/Talk

Cohomological integrality for quotient stacks

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Host: Tamas Hausel / Tanguy Vernet

In this talk, I will explain the notion of cohomological integrality, originally introduced by Kontsevich and Soibelman in the context of quiver representations, and which has then been extended to a broader range of settings, including sheaves on K3 surfaces and, more generally, 2- and 3-Calabi-Yau categories. My focus will be on extending these results to the setting of quotient stacks arising from representations of reductive groups and, more broadly, smooth affine algebraic varieties under the action of a reductive group. The main result is a decomposition of the cohomology of the corresponding quotient stack (which is usually infinite-dimensional) into finitely many pieces involving finite-dimensional subspaces. The objective is to define and understand enumerative invariants associated with the corresponding Geometric Invariant Theory (GIT) quotients. I will present the core representation-theoretic results that underlie these constructions and discuss the application to the proof of a purity conjecture of Halpern-Leistner for derived stacks with self-dual cotangent complex. I will also mention the link with the intersection cohomology of the affine GIT quotient, following independent and recent work of Bu, Davison, Ibanez Nunez, Kinjo and Padurariu.

Thursday, April 10, 2025 01:00pm - 03:00pm
Office Bldg West / Ground floor / Heinzel Seminar Room (I21.EG.101)

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