



THE WORLDWIDE CENTER OF MATHEMATICS

Module varieties with dense orbits in every component



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Coffee, tea, cookies: 3:30pm
Talk: 4-5pm

929 Massachusetts Ave., Cambridge, Suite #102

Abstract: Given a finite-dimensional associative algebra A , the set of A -modules of a fixed dimension d can be viewed as a variety. This variety carries a group action whose orbits correspond to isomorphism classes of A -modules. A natural problem is to relate representation theoretic properties of an algebra to its module varieties.

Our work is motivated by a straightforward observation for algebras of global dimension one: such an A is of finite representation type if and only if all of its module varieties have a dense orbit, which is also if and only if all weight spaces of semi-invariants in the coordinate rings of its module varieties have dimension one. Our goal is to generalize these statements to higher global dimension.

In the talk, we present counterexamples to the naïve generalizations, along with plausible modifications and a summary of cases where the modified conjectures are proven correct. The counterexamples give a new class of algebras that are representation infinite but still admit classification of "generic" modules by geometric methods. This is joint work with Calin Chindris and Jerzy Weyman.

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