

Semistability and projective presentations

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Stability conditions are an important tool in algebraic theory for constructing moduli varieties. When applied to the varieties of modules over a finite-dimensional algebra, they give rise to the algebraic notion of semistable modules, which are closely linked to *tau*-tilting theory and cluster algebras. To find these semistable modules, one can compute a special class of regular functions known as determinantal semi-invariants. In this talk, we will revisit the relation of these semi-invariants to projective presentations and explore semistability for varieties of projective presentations. We will recall that determinantal semi-invariants give rise to two interesting types of subcategories, namely, wide subcategories of the module category and thick subcategories of the extriangulated category of projective presentations. Finally, we will introduce an extriangulated version of the correspondences among support *tau*-tilting objects, torsion classes, and wide subcategories. This correspondence extends classical results to the context of projective presentations.

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