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Brick directed algebras and brick-splitting torsion classes

In this talk, we will explore a new class of algebras called brick-directed algebras, which can be defined as those algebras having no oriented cycles of bricks in their module category. We characterize these algebras from many different viewpoints, including from their torsion theory and their wall-and-chamber structure. A key feature arising in the study of these algebras is the notion of brick-splitting torsion pairs, which are those torsion pairs with the property that any given brick is either torsion or torsion-free. We completely characterize the brick-splitting torsion classes combinatorially within the lattice of torsion classes and derive some consequences of this. This is joint work with Sota Asai, Osamu Iyama and Kaveh Mousavand.