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Constructing generic bricks from quasi-universal sheaves on the moduli space of quiver representations

Let A a finite-dimensional algebra, presented as the quotient of the path algebra of a quiver. An A-module M is called a *brick* if its endomorphism ring is a division algebra, and A is said to be *brick-infinite* if it admits infinitely many isomorphism classes of finite-dimensional bricks. Mousavand conjectures that if A is brick-infinite, then there exists infinitely many isomorphism classes of bricks of the same dimension vector. It is also expected that this infinite family of finite-dimensional bricks should be controlled by a single, but infinite-dimensional brick, called a *generic brick*.

In this talk, I will explain the geometry underlying the relationship between these notions. Indeed, in the case that we have a moduli space $\mathcal{M}$ of stable A-modules of a given dimension vector, we construct a so-called *quasi-universal* sheaf on $\mathcal{M}$. We use this sheaf to build an infinite-dimensional brick at the generic point, while its fibres over closed points give an infinite family of finite-dimensional bricks.