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Quasi-universal sheaves and generic bricks

This is based on joint work with Colin Ingalls and Charles Paquette. For a quiver $Q = (Q_0, Q_1)$ and dimension vector $d = (d_i)_{i \in Q_0}$ we study a coarse moduli M space of quiver representations. Let d be the greatest common divisor of the numbers d_i. In the case that $d = 1$, it is known that M admits a universal family U of representations, and hence is a fine moduli space: that is, U is a sheaf of kQ-modules on M such that for every point $m \in M$ corresponding to a kQ-module V_m, the fibre U_m of U at m is isomorphic to the representation V_m. However, this fails when $d > 1$ (Reineke–Schröer, Hoskins–Schaffhauser); instead M admits a *quasi-universal* family $\tilde{U}$ whose fibre $\tilde{U}_m$ is isomorphic to a direct sum of copies of the representation V_m. In this talk, I will introduce the notion of twisted sheaves and sketch the construction of the sheaf $\tilde{U}$. I will explain how we can use the quasi-universal sheaf $\tilde{U}$ to construct generic bricks for the path algebra kQ.