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Twisted sheaves and quasi-universal bundles

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, we will introduce the notion of twisted sheaves and sketch the construction of the sheaf \tilde{U} .