ANNE SHEPLER, University of North Texas
Resolutions for twisted tensor products

Finding the cohomology of a module or algebra is often hampered by lack of a convenient explicit resolution. Yet many algebras are generated by smaller subalgebras with nice resolutions. We give a technique for weaving together resolutions of smaller algebras to create a resolution for a parent algebra in order to determine cohomological data. In particular, we consider algebras that arise as the product of two subalgebras as a vector space, introducing *twisted tensor resolutions* for twisted tensor products. Many noncommutative algebras manifest as twisted tensor products: Weyl algebras, quantum polynomial rings, Ore extensions in general, Koszul pairs, Sridharan algebras, smash products of groups acting on Koszul rings, semi-direct product algebras in general, and universal enveloping algebras of Lie algebras, for example. The Chevalley-Eilenberg resolution for computing Lie algebra cohomology arises as a special case of the twisted tensor resolution. This construction is also helpful for computing Hochschild cohomology and finding deformations. Joint with Sarah Witherspoon.