Title: Hopf Algebras and Their Applications in Topological Field Theory

Abstract: Hopf algebras are algebras for which one can form the tensor product of two representations. In more abstract terms, this means that their representation category is a tensor category, and all additional required properties of this tensor category can be translated into properties of the corresponding Hopf algebra. If these properties are suitably chosen, one can construct representations of mapping class groups of surfaces on certain spaces of homomorphisms between certain representations, the so-called block spaces. In the non-semisimple setting, these mapping class group representations generalize from these homomorphism spaces to their Ext-groups.

In the talk, we first give an introduction to Hopf algebras in general and then explain how they can be used to construct mapping class group representations. Part of the talk is based on joint work with S. Lentner, S. N. Mierach, and C. Schweigert.