

Name: Kazuo Habiro

Research Field: Topology

Keywords: 3-manifolds, quantum invariants, finite type invariants, quantum groups, Hopf algebras, homological algebra

Present research:

I have been interested in algebraic structures in 3-dimensional topology. My main research topics are surgery equivalence relations for links and 3-manifolds, quantum invariants, finite type invariants, Kirby calculus of framed links, categorified quantum groups, etc. Most of these are within the field of quantum topology. One of the axes of these studies is the understanding of 3-dimensional topology through category-theoretic structures and Hopf algebraic structures. Recently, I am also interested in topics of algebraic topology such as group cohomology and homological algebra. I would like to study the relationship between quantum topology and algebraic topology as well.

Prerequisites:

Basic understanding of algebraic structures (groups, rings, fields, modules, categories and functors), manifolds and homology of topological spaces is necessary. It would be desirable to study some from the following topics as well according to your interests: low-dimensional topology (surfaces, 3-manifolds and knots), algebraic topology, representation theory of symmetric groups, general linear groups, etc., Hopf algebras (including quantum groups), more advanced topics in category theory (such as tensor categories and higher dimensional categories).