

ARITHMETIC TECHNIQUES IN THE STUDY OF MODULAR CATEGORIES

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Modular categories are algebraic structures that arise in several areas of mathematics, including low-dimensional topology, representation theory, and operator algebras. Their study is also motivated by applications to mathematical physics and topological quantum computation, where they provide algebraic models for topological phases of matter. One of the central problems in the area is to understand and classify these categories through their invariants.

In this talk, we will begin by introducing the basic definitions and properties of fusion, braided, and modular categories, together with some examples. We will then discuss how certain arithmetic tools, particularly Galois symmetries and the Frobenius–Schur exponent, can be used to obtain information about the structure of a modular category. We will mention results concerning fusion subcategories, bounds on certain invariants, and applications to classification problems, if time allows.

Trabajo en conjunto con Agustina Czenky (University of Southern California, EEUU), Andrew Schopieray (SUNY Plattsburgh, EEUU), Zhiqiang Yu (Yangzhou University, China) y Qing Zhang (University of Manitoba, Canada).