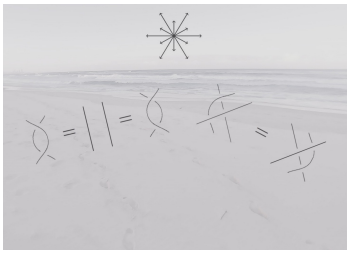
institute for pure & applied mathematics

Symmetric Tensor Categories and Representation Theory



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Scientific Overview

A tensor category is symmetric if it comes equipped with a braided structure that squares to the identity. A prototypical example is the category of finite dimensional representations of an affine group scheme, where the braiding is the usual swap. These categories provide a natural habitat for any kind of algebraic structure, which should, in principle, differ at a fundamental level from the usual structures defined over the category of vector spaces. In characteristic zero, a celebrated theorem by Deligne establishes that a symmetric tensor category has moderate growth if and only if it is equivalent to the category of super representations of an affine supergroup scheme. But as usual, the story in positive characteristic differs due to additional symmetries. This was first shown in the early 90's, where Verlinde categories, certain symmetric fusion categories with non-integral dimension, were built as a quotient of the tilting categories of some classical groups.

Symmetric tensor categories in positive characteristic have garnered significant attention in recent years, following a breakthrough initiated by the quest of providing substitutes for Deligne's theorem. Among others, the theory has applications to the study of modular representations of finite groups, and to Lie superalgebras in positive characteristic. On the other hand, the theory has encouraged the study of algebraic structures in certain symmetric categories, preeminently commutative algebras, affine group schemes and Lie algebras. This last direction also includes categories of super-exponential growth, which are thought of as representation categories of classical groups in non-integral rank, and play a fundamental role in stability questions.

The workshop aims to bring together researchers whose work involves the exploration of symmetric categorical structures in different contexts such as Hopf algebras, tensor categories, Lie superalgebras, homological algebra, and representation theory. The meeting will promote an exchange of ideas within researchers at different stages of their careers, and we hope to leave ample time for open-ended conversation and collaborative discussion.

Participation

Additional information about this workshop including links to register and to apply for funding, can be found on the webpage listed below. Encouraging the careers of women and minority mathematicians and scientists is an important component of IPAM's mission, and we welcome their applications.

Organizers

Iván Angiono (Universidad Nacional de Córdoba)
Pavel Etingof (MIT)
Cris Negron (USC)
Julia Plavnik (Indiana University)
Guillermo Sanmarco (Iowa State University)

Speakers

Jonathan Brundan (Uni. of Oregon), **Kevin Coulembier** (Uni. of Sydney), **Agustina Czenky** (Uni. of Oregon), **Christopher Drupieski** (DePaul University), **Alberto Elduque** (Universidad de Zaragoza)
Eric Friedlander (USC), **Shlomo Gelaki** (Iowa State Uni.), **Nate Harman** (Uni. of Michigan), **Thorsten Heidersdorf** (Uni. of Bonn), **Arun Kannan** (MIT), **Jonathan Kujawa** (Uni. of Oklahoma), **Dmitri Nikshych** (Uni. of New Hampshire), **Victor Ostrik** (Uni. of Oregon), **Bregje Pauwels** (Uni. of Sydney), **Julia Pevtsova** (Uni. of Washington), **Alistair Savage** (Uni. of Ottawa), **Vera Serganova** (UC Berkeley), **Noah Snyder** (Indiana University), **Catharina Stroppel** (Rheinische Friedrich-Wilhelms-Universität Bonn), **Alexandra Utiralova** (UC Berkeley),
Kent Vashaw (MIT)
Sarah Witherspoon (Texas A&M University - College Station)

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For more information, visit the program webpage:
www.ipam.ucla.edu/STC2024