



Kolloquium über Reine Mathematik

Einladung zu einem Vortrag

Dienstag, 25.11.2025

17 Uhr, Geom H4

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Algorithmic Aspects of Fusion Categories

Abstract:

A model example of a fusion category is the category of all finite-dimensional complex representations of a finite group: we can add and tensor them, we can take duals, and due to semisimplicity we have "fusion rules". These features motivate the general notion of fusion categories, which can be viewed as categorical analogues of finite groups. The categorical center of a fusion category is again a fusion category, equipped with an additional structure called braiding---a categorical commutativity property. Braided fusion categories play an important role in areas such as rational conformal field theories.

Given an explicit fusion category, how can we compute its center in practice? To explore fusion categories computationally, my PhD student Fabian Mäurer and I developed the software package `TensorCategories.jl`, in which we implemented a new general algorithm we devised for computing centers of fusion categories. Using it, we computed the centers of all 279 multiplicity-free fusion categories up to rank 5. More recently, in collaboration with Gert Vercleyen, we also computed the center of the Haagerup subfactor H_3 .

My talk is rather hands-on and includes some live software demonstrations (assuming the computer cooperates).

**Vor dem Vortrag (ab 16.30 Uhr) stehen im Foyer vor Hörsaal H4
Kaffee und Tee bereit.**