

Higher structures, categorified homology, and the topological A-model

Initiative: Lichtenberg - Professuren

Bewilligung: 13.08.2018

Laufzeit: 5 Jahre

Projekt-Website: <https://www.math.uni-hamburg.de/home/dyckerhoff/>

The professorship investigates higher structures in algebra and geometry with an emphasis on applications to topological quantum field theory in order to develop a novel theory of categorified homological algebra furnishing effective tools for mathematics and physics. The long-term interdisciplinary goal within this general context is the description of a physical theory, known as the topological A-model, in terms of a proposed new mathematical theory of categorified homology. The innovation includes a new, computationally amenable description of topological Fukaya categories which would lead to a substantial impact in numerous related areas. The four research topics are: foundations of categorified homological algebra, topological Fukaya categories as categorified cohomology, combinatorial topological field theories, and equivariant matrix factorization categories. All goals are aimed at advancing various aspects of categorified homology and its relation to the topological A-model.

Projektbeteiligte

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Open Access-Publikationen

Marked colimits and higher cofinality

The symplectic geometry of higher Auslander algebras: Symmetric products of disks

A categorified Dold-Kan correspondence

A relative 2-nerve