



## Kolloquium über Reine Mathematik

Einladung zu einem Vortrag

**Dienstag, 28. November 2023**

17 Uhr, Geom H4

Prof. Claudia Scheimbauer  
(Technische Universität München)

**A mathematical guide to fully local topological  
field theories and relatives**

Abstract:

In the past 15 years the celebrated Cobordism Hypothesis has given us new tools to obtain fully local topological field theories, albeit in a non-constructive way, and doesn't give a recipe on how to extend bordism invariants or partition functions to general bordisms. On the other hand, an explicit construction often is more desirable for computations. I will give a tour on the mathematical description of fully local topological field theories using higher categories (in an informal and black box way) and give a glimpse on the challenges in using, or not using, the Cobordism Hypothesis. At the end I will give an outlook on relative (field theories), which are central in a modern approach to describe symmetries.

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

**PreTalk für interessierte MSc / PhD Studenten und Postdocs  
um 15:00 – 15:45 Uhr in H4:**

**A guide to the guide — finite homotopy theories**

In this talk I will focus on a family of fully local topological field theories which is often used as a symmetry TFT: finite homotopy theories. They generalize Dijkgraaf-Witten theory (using BG) and can be obtained via a finite path integral procedure. Mathematically, this uses centrally the notion of (higher) semiadditivity of (higher) categories (Hopkins-Lurie, Harpaz). Semiadditivity recently has had prominent applications in chromatic homotopy theory, leading to the answer to two of the main conjectures in the field (Carmeli-Schlank-Yanowski, with Barthel, Ben-Moshe). I will focus on this example to illustrate the ideas which will appear in the Kolloquium. This is joint work with Tashi Walde.