

TOPOLOGY DAY, September 27

Following the PhD defense of Giovanni Caviglia on 26 September, we will organise a "Topology Day" in Utrecht on the following day.

Venue: Westerdijk Room, Academiegebouw, Domplein, Utrecht.

Programme

10.45 coffee

11.00-12.00 **Carles Casacuberta** (Barcelona):
Lifting localizations to model categories of algebras over monads

12.00-13.00 Steffen Sagave (Nijmegen):
Rigidification of homotopy coherent commutative multiplications

Lunch

14.30-15.30 **Ralph Kaufmann** (Purdue):
Feynman categories 2.0 tea

16.00-17.00 (GAGA seminar lecture)
Claudia Scheimbauer (Bonn):
Twisted field theories and the higher Morita category

17.00-18.00 **Fernando Muro** (Sevilla):
On moduli spaces of triangulated structures

Drinks and dinner in the Faculty Club

Abstracts: see next page

Abstracts

Carles Casacuberta:

(t.b.a.)

Steffen Sagave

In this talk I will explain how the use of functors defined on the category I of finite sets and injections makes it possible to replace E -infinity objects by strictly commutative ones. For example, an E -infinity space can be replaced by a strictly commutative monoid in I -diagrams of spaces. The quasi-categorical version of this result is one building block for an interesting rigidification result about multiplicative homotopy theories: we show that every presentably symmetric monoidal infinity-category is represented by a symmetric monoidal model category. (This is based on joint work with C. Schlichtkrull, with D. Kodjabachev, and with T. Nikolaus)

Ralph Kaufmann

We will discuss further constructions and applications of Feynman categories. These lead to new connections to number theory, physics and geometry.

Claudia Scheimbauer

After giving an introduction to functorial field theories I will explain a natural generalization thereof, called "twisted" field theories by Stolz-Teichner and closely related to Freed-Teleman's "relative" boundary field theories. The definition uses the notion of lax or oplax natural transformations of strong functors for which I will sketch a framework. A natural target for such a twisted field theory is the higher Morita category of algebras, bimodules, and intertwiners, and generalizations thereof. I will use this example to explain the concept of a higher category. The main tool will be the notion of a factorization algebra, which can be thought of as a multiplicative version of a cosheaf and which is an algebraic structure encoding the structure of the observables of a perturbative quantum field theory. Examples include (homotopy) algebras and (pointed) bimodules, but also braided monoidal categories such as the category of finite dimensional representations of a reductive algebraic group $\text{Rep } G$ or of the associated quantum group $\text{Rep } U_q(\mathfrak{g})$, and, coming from topology, E_n -algebras, which are algebras for the little disks operad. This is based on joint work with Damien Calaque and Theo Johnson-Freyd.

Fernando Muro

Kontsevich's homological mirror symmetry conjecture refers to hypothetical moduli spaces of triangulated categories. We will propose an explicit construction in the locally finite case, which has been extensively studied from a classical perspective by Xiao and Zhu, Amiot, and Krause. The obstruction theory for the existence and uniqueness of enhancements works particularly well with these triangulated categories, allowing for explicit computations.