



Kolloquium über Reine Mathematik

Einladung zu einem Vortrag

Dienstag, 5. Dezember 2017

17 Uhr s.t., Geom H4

Prof. Dr. Thorsten Altenkirch
(University of Nottingham)

A Taste of Homotopy Type Theory

Abstract:

Homotopy Type Theory (HoTT) is a constructive foundation of Mathematics extending Martin-Löf Type Theory by the univalence principle and higher inductive types. These principles are derived from a homotopy-theoretic interpretation of Type Theory developed by Vladimir Voevodsky. In Type Theory we cannot distinguish semantically equivalent mathematical objects (such as isomorphic sets), the univalence principle implies that they are actually equal. A consequence of this principle is that equality types have a non-trivial structure, they can be understood as weak omega groupoids. Higher inductive types are a spin-off of this insight, they allow us to define higher structures inductively by giving constructors not only for elements but also for equalities (paths). This has been exploited to develop synthetic homotopy theory in HoTT but it also has some interesting applications in constructive Mathematics: in some case we can avoid using the axiom of choice and replace it by constructively acceptable principles.

In my talk I would like to give an overview over HoTT covering the basic concepts in a non-technical way. More details can be found in the HoTT book [1]. [1] Homotopy Type Theory: Univalent Foundations of Mathematics The Univalent Foundations Program Institute for Advanced Study, 2013 <https://homotopytypetheory.org/book/>

Vor dem Vortrag (ab 16.30 Uhr) stehen im Raum 327 Kaffee und Tee bereit.