



Universität Hamburg

DER FORSCHUNG | DER LEHRE | DER BILDUNG

CHAMPP

CENTER IN HAMBURG FOR
ASTRO-, MATHEMATICAL AND
PARTICLE PHYSICS

LECTURE COURSE IN THE QUANTUM UNIVERSE RESEARCH SCHOOL

Winter Term 2023/2024

Introduction to Higher Category Theory

T. Dyckerhoff

Course Description:

This course will be an introduction to higher category theory focussing on the approach via infinity-categories.

- Simplicial sets and simplicial homotopy theory
- The basic language of infinity-categories
- Simplicial categories and quasi-categories
- Stable infinity-categories
- Goodwillie calculus

Prerequisites:

Familiarity with basic concepts from category theory and algebraic topology will be useful, but aspects relevant for this course will be reviewed.

Literature:

The main reference will be Lurie's book "Higher topos theory". Moreover

- Brandenburg: Einführung in die Kategorientheorie
- Mac Lane: Categories for the working mathematician
- Weibel: An introduction to homological algebra
- Goerss-Jardine: Simplicial Homotopy Theory
- Lurie: Higher Algebra
- Joyal-Tierney: Quasi-categories vs Segal spaces

Date and Place: Tue, 10:15–11:45, Hörsaal H3, Geomatikum
Fri, 14:15–15:45, Hörsaal H4, Geomatikum

Problem Classes: Thu, 10:15–11:45, SR 210, Sedanstraße 19
Starting on: 26 October 2023

Starting on: 17 October 2023
