

The combinatorics of homotopy theory

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(Tea 3:30 pm Math Lounge)

Abstract

The beginnings of algebraic topology over a century ago were closely related to combinatorics, through the concept of a simplicial complex. However, homotopy theory has since become more abstract, as well as more algebraic, and has distanced itself from its origins.

In this talk I shall briefly explain what homotopy theory is, what homotopy groups and (primary) homotopy operations are, and how higher homotopy operations might arise, because of the difference between the world of topological spaces and the homotopy category. I will then describe a general theory of higher homotopy operations, together with its combinatorial underpinnings. No previous knowledge of homotopy theory will be assumed.

Joint work with Martin Markl.