

# Topology Seminar

**Martin Frankland**

of MIT will be speaking on

## Quillen cohomology of $\Pi$ -algebras and application to their realization

on April 27 at 4:30 in  
MIT Room 2-131

A  $\Pi$ -algebra is a graded group with additional structure that makes it look like the homotopy groups of a space. Given one such object  $A$ , one may ask if it can be realized topologically: Is there a space  $X$  such that  $\pi_* X$  is isomorphic to  $A$  as a  $\Pi$ -algebra, and if so, can we classify them?

Work of Blanc-Dwyer-Goerss provided an obstruction theory to realizing a  $\Pi$ -algebra  $A$ , where the obstructions (to existence and uniqueness) live in certain Quillen cohomology groups of  $A$ . What do these groups look like, and can we compute them?

We will tackle this question from the algebraic side, focusing on Quillen cohomology of truncated  $\Pi$ -algebras. We will then use the obstruction theory to obtain results on the classification of certain 2-stage homotopy types, and compare them to what is known from other approaches.