# Rigidity and algebraic models in stable homotopy theory

Masterclass, Copenhagen
April 9-13, 2018

Outline of the lectures by Stefan Schwede: Rigidity of the stable homotopy category

**Lecture 1.**
Review of model categories and Quillen equivalences. Stable model categories and triangulated categories. Models for the stable homotopy category. Statement of the rigidity theorem for model categories, and for $\infty$-categories. Examples of 'exotic' models.

**Lecture 2.**
The universal property of the homotopy theory of spectra: the free stable homotopy theory on one object. Rigorous formulations for model categories and for $\infty$-categories.

**Lecture 3.**
The notion of 'order' in triangulated categories. Algebraic triangulated categories have infinite order. The upper bound for the $p$-order of the $p$-local stable homotopy category.

**Lecture 4.**
Coherent actions of mod-$p$ Moore spaces. Lower bound on the $p$-order in topological triangulated categories. How the vanishing of $\alpha_1$ provides extra coherence, and hence increased $p$-order.

**Lecture 5.**
Reduction of the rigidity theorem to $p$-local statements. Reduction to elements of Adams filtration 1. Proof of the rigidity theorem, via the bounds on the $p$-order.