Algebra/Topology Seminar

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Towards Cubical Models of Higher Category Theory

Thursday, December 5, 2019
1:15 p.m. in ES-143

Abstract. Cubical sets provide an alternative to simplicial sets as a combinatorial model for spaces a.k.a. ∞-groupoids. Joyal showed that simplicial sets also carry a model structure presenting $(\infty, 1)$-categories, but the cubical counterpart of his result has not been established. The goal of this project is to develop workable foundations of $(\infty, 1)$-category theory in the category of cubical sets. To this end, in joint work with Zach Lindsey, Christian Sattler and Liang Ze Wong, we define four model structures on categories of (marked and unmarked) cubical sets and explore some of their properties. We conjecture that all of these model structures are equivalent to the Joyal model structure on simplicial sets.