Topology Seminar

David Ayala

of Harvard University will be speaking on

A combinatorial E_n operad

on November 22 at 4:30 in
MIT Room 2-131

I will propose a simple and combinatorial E_n-operad which is built out of finite posets indexing a stratification of configuration spaces of points in an n-disk. This poset is constructed from a category θ_n which has recently become an important player for modeling weak n-categories (Joyal, Berger, Rezk). The techniques involved use the formalism of quasi-categories (Lurie). This project is joint with Richard Hepworth (Copenhagen) and is a work in progress.

One (nearly achieved) goal is to directly and geometrically relate three well-developed methods for recognizing n-fold loop spaces: as certain algebras over the little n-disk operad, as certain algebras over the Barratt-Eccles E_n operad (via the Smith filtration), and as certain presheaves on θ_n (Berger). A version of Dunn's additivity theorem becomes a formal consequence of the setup. A farther away goal is to imitate the construction of topological chiral homology using this proposed E_n-operad. This should have the benefit of making topological chiral homology (and possibly other field theories) more prepared for computations.