Topology Seminar

Emily Riehl

of Harvard University will be speaking on

Cell complex presentations for (generalized) Reedy categories

on November 25 at 4:30 in
MIT Room 2-131

Reedy categories come with a degree filtration on objects, enabling the inductive definitions of diagrams and natural transformations. We show that the axioms supply a canonical cell complex presentation for the hom bifunctor with cells defined to be pushout-products of "boundary inclusions". This translates to a canonical presentation of any diagram or natural transformation as a (relative) cell complex and as a (relative) Postnikov tower whose cells are built from the latching or matching maps. This work, joint with Dominic Verity, makes the proof of the Reedy model structure essentially trivial and leads to a geometric criterion characterizing the Reedy categories which give formulae for homotopy (co)limits. Work in progress extends these results to generalized Reedy categories, where algebraic weak factorization systems provide a natural tool to define the equivariant factorizations required to extend diagrams from one degree to the next.