Topology Seminar

Emily Riehl

of Johns Hopkins University will be speaking on

The synthetic theory of ∞-categories

on November 19 at 4:30 in
MIT Room 2-131

The pioneering work of Joyal, Lurie, et al to extend ordinary category theory to the setting of ∞-categories is "analytic", with the precise statements of theorems given in reference to a particular model (quasi-categories) and proofs drawing on the combinatorics of simplicial sets. This talk will describe joint work with Dominic Verity that reveals that much of that theory can be redeveloped "synthetically" in an axiomatic framework that is natively "model-independent", casting new light on the theory of quasi-categories while simultaneously generalizing it to other models. At the conclusion, we consider the question of the model-invariance of ∞-category theory, proving that ∞-categorical structures are preserved, reflected, and created by a number of "change-of-model" functors. As we explain, it follows that even the "analytically-proven" theorems that exploit the combinatorics of one particular model remain valid in the other "biequivalent" models.