Geometry and Topology Seminar

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The Homotopy category is not a Homotopy Category

Abstract:

 In his paper with the cryptic title "The homotopy category is a homotopy category" Arne Strom shows that the homotopy category of topological spaces satisfies the axioms of an abstract homotopy category in the sense of Quillen. In this paper we show that the latter category is but a pale reflection of the richness and depth of the topological category. In other words we show that the homotopy category of topological spaces has many subtleties that the axiomatic approach of Quillen fails to capture. The examples we give will also provide a method of detecting whether a theorem in classical homotopy theory will have a corresponding model categorical formulation or not. If it can't be dualized in hTop then it cannot be deduced from the axioms of a model category