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Equivariant fundamental groupoids as categorical constructions

The equivariant fundamental groupoid, first defined by tom Dieck, is a category which incorporates the fundamental groupoids of all of the fixed sets of a G -space X . It was later reinterpreted as a Grothendieck construction of the fundamental groupoid functor. When considering compact Lie groups with their own topology, tom Dieck also defined a discrete version of this category, equating certain homotopies coming from within the group structure. This can also be interpreted using a Grothendieck construction, but it needs to be considered as a 2-functor into a 2-category.

My goal in this talk is to introduce the various fundamental groupoids, with examples, and show how they follow naturally from a study of equivariant topology. I will then explain how to view them categorically, illustrating how these higher categorical structures capture the topology. As time allows, I will discuss how this interpretation can be used to show a Morita equivalence for representable groupoids.

This is joint work with D. Pronk at Dalhousie University.