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A tom Dieck Fundamental Groupoid for Orbifolds

In this talk I will introduce a version of the tom Dieck fundamental groupoid for orbifolds.

This fundamental groupoid was first introduced in the context of equivariant homotopy theory, as part of the Bredon approach (which provides finer invariants than the Borel approach). It provides more information about the fixed-point manifolds than the Borel fundamental group, and it provides the right object to define Bredon cohomology with twisted/local coefficients.

Each orbifold can be written as the quotient of a manifold by a compact Lie group but this representation is only unique up to Morita equivalence. So if we want to use invariants from equivariant homotopy theory, we need to show that they are Morita invariant and functorial with respect to orbifold maps.

So I will describe the tom Dieck fundamental groupoid for orbifolds, give some of its properties, sketch that it is indeed an orbifold invariant and give a number of examples for low dimensional orbifolds. As time permits, I will discuss the use in Bredon cohomology with twisted coefficients.