

Laura Scull *
Fort Lewis College

Equivariant fundamental groupoids as categorical constructions

The equivariant fundamental groupoid, first defined by tom Dieck in [3], 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 category of the fundamental groupoid functor, giving a concrete and geometric example of such a construction. Tom Dieck also defined a discrete version of this category, modding out homotopies coming from within the group structure. I will explain how this can also be interpreted using a Grothendieck construction of a 2-functor into a 2-category as defined in [1, 2]. I will also discuss the functoriality of this construction, leading to a psuedo natural transformation which can be tied back into the geometric structure of the G space.

I will explain these constructions, with many pictures to illustrate. As time allows, I will discuss how this interpretation might in future lead to a Morita equivalence for representable groupoids using work in [4].

REFERENCES:

- [1] Igor Bakovic, *Fibrations of bicategories*,
<http://www.irb.hr/korisnici/ibakovic/groth2fib.pdf>.
- [2] Mitchell Buckley, Fibred 2-categories and bicategories, *Journal of Pure and Applied Algebra* **218** (2014), pp. 1034–1074.
- [3] T. tom Dieck, *Transformation Groups*, Walter de Gruyter (1987).
- [4] D. Pronk and L. Scull, Translation Groupoids and Orbifold Bredon Cohomology, *Canadian J. Math.*, **62** (2010), pp. 614–645.

*Joint work with Dorette Pronk.