

Martin Szyld
Universidad de Buenos Aires

The homotopy relation in a category with weak equivalences

I will present the results of the article [1] which deals with the classical construction of the homotopy category of a model category (which is done by performing a quotient of the arrows by the homotopy relation, [2]) in the context of categories with weak equivalences [3]. By studying this situation in an abstract context, one can define a relation of homotopy only with respect to the weak equivalences which yields the desired localization and coincides with the classical one for model categories. As it is usually the case, the proofs of these results, which consider only a family of arrows instead of three, become simpler. In particular, they allowed a generalization to bicategories in a current work [4] with E. Descotte and E. Dubuc, which I will present too if time permits.

References:

- [1] Szyld M., The homotopy relation in a category with weak equivalences, arXiv:1804.04244 (2018).
- [2] Quillen D., Homotopical Algebra, *Springer Lecture Notes in Mathematics 43* (1967).
- [3] Dwyer W.G., Hirschhorn P.S., Kan D.M., Smith J.H., Homotopy Limit Functors on Model Categories and Homotopical Categories, *AMS Mathematical Surveys and Monographs 113* (2004).
- [4] Descotte M.E., Dubuc, E., Szyld M., A localization of bicategories via homotopies, arXiv:1805.05248 (2018).