

Online Algebra, Logic and Topology Seminar (CMUC, University of Coimbra)

Speaker: Soichiro Fujii (National Institute of Informatics, Japan)

Date: May 4th, 2026

Time: 10:00 (Europe/Lisbon)

Place: Google Meet

Nerves of T-categories and powerful T-functors

Abstract. Burroni's T -categories generalize internal categories, which themselves generalize ordinary (small) categories. The classical nerve construction assigns to a small category a simplicial set, and this construction extends routinely to internal categories: any internal category in a category \mathcal{E} gives rise to a simplicial object in \mathcal{E} as its nerve.

In recent joint work with Steve Lack, titled *Nerves of generalized multi-categories*, we extend the nerve construction further to Burroni's T -categories. For a category \mathcal{E} equipped with a monad T , we introduce the notion of a T -simplicial object in \mathcal{E} and show that every T -category determines a T -simplicial object. Moreover, those T -simplicial objects arising from T -categories admit a simple characterization.

In this talk, I will explain these results and discuss an application to the study of powerful (or exponentiable) T -functors.

This talk is based on ongoing joint work with Steve Lack.