# TOPOLOGY SEMINAR

# The coherent nerve

**By**

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**Abstract:** The aim of this talk is to introduce the homotopy coherent nerve of a simplicially enriched category and discuss some related constructions. To the best of our capabilities, we will try to focus on the heuristic aspects of the bits of theory we present. The coherent nerve is part of an explanatory cycle which tells us that the simplicial model and the quasi-category model for (oo, 1)-categories are equivalent.
We begin by informally discussing the central notion of homotopy coherence in a simplicial category. This way, the coherent nerve can be understood to be comprised of coherent simplices. The formal definition can be formulated via a Yoneda extension of a cosimplicial object in simplicially enriched categories.
It follows from the construction that this nerve construction has an adjoint, which is not so easy to understand at first glance. The latter functor can be interpreted as a free (simplicially enriched) categorification and understood via the necklace construction of Dugger and Spivak. Simplicial categorification is of interest: for example, when applied to the nerve of a category it produces a cofibrant replacement in the Bergner model structure which allows us to have a precise definition of homotopy coherence.

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**Time:** 13:30
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To request the event link, please send a message to cihan.okay@bilkent.edu.tr