

A simplicial approach to the sheaf theoretic construction of intersection cohomology

mardi 26 octobre 2021 16:45 (40 minutes)

Intersection (co)homology is a way to enhance classical (co)homology, allowing us to use a famous result called Poincaré duality on a large class of spaces known as stratified pseudomanifolds. There is a theoretically powerful way to arrive at intersection (co)homology by a classifying sheaves that satisfy what are called the Deligne axioms.

Parallel to this, it is common knowledge in algebraic topology that simplicial structures make for good representations of topological spaces. There is a successful way to construct a simplicial intersection (co)homology exposed in the works of D. Chataur, D. Tanré and M. Saralegi-Araguren, but a simplicial manifestation of the Deligne axioms has remained under shadows until now.

This exposition draws on constructions made by these authors, showing a simplicial manifestation of the Deligne axioms. We begin by exposing the classical theory, then presenting a construction of simplicial sheaves and a statement of simplicial Deligne axioms that work for the different simplicial structures, to finally focus on simplicial complexes, with which we can successfully arrive into a way to construct simplicial intersection (co)homology.

This exposition summarizes the results obtained during my PhD thesis under the guidance of professor David Chataur.

Orateur: CEA, Sebastian