

# Homology, Filtrations and Frame Analysis: a Framework for Signal Recognition

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## **Abstract**

A filtration is a core concept in persistent homology, it provides a unified setting where different instances of finite topological and geometrical structures need to be analyzed. A filtration can also be seen as a functor from a partial ordered set (seen as a category) into the category of vector spaces. This point of view provides a convenient description for studying homology of filtrations and their stability theorems. In this talk we present a basic background for these topics as a step toward applications to frame analysis. Some of these developments are motivated by modern signal processing methods in signal recognition.