# Invariants for tame parametrised chain complexes

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Data analysis is often about simplifying, ignoring most of the information available and extracting what might be meaningful to a task at hand. This strategy of making sense by disregarding some information and focusing on aspects that might be relevant is very common across mathematics. Colocalization in homotopy theory is an example of such a process. In colocalization, simplification is achieved by approximating arbitrary objects by other objects that one considers simpler and more manageable. For instance, by approximating a given space by n-connected spaces, one obtains its n-connected cover. The aim of our presentation is to explain why extracting persistence invariants in Topological Data Analysis (TDA) is an example of the homotopical colocalization process. This allows us to extract computable invariants also in certain cases, such as commutative ladders, that have not been covered by more standard approaches. Furthermore, it allows for a comprehensive theory including several cases that standard persistence theory handles separately, such as persistence modules, zigzag modules, and commutative ladders.