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Singular chain complex of a topological space over $\mathbb{Z}$

Definition. Singular chain complex of a topological space over $\mathbb{Z}$

A singular n -simplex on a topological space X is just a continuous map $\sigma : \Delta^n \rightarrow X$ and we obtain the free Abelian group generated by all these elements

$$\mathbb{Z}\mathcal{C}^0(\Delta^n, X)$$

whose elements are **singular n -chains** and define the boundary map

$$\partial_n : \mathcal{C}^0(\Delta^n, X) \rightarrow \mathcal{C}^0(\Delta^{n-1}, X)$$

which gives the **singular chain complex**

$$\text{sing}_*(X) := (\mathbb{Z}\mathcal{C}^0(\Delta^n, X), \partial_*)$$

The homology

$$H_n(\text{sing}_*(X)) := \frac{\ker \partial_n}{\text{im } \partial_{n+1}}$$

is the n -th **singular homology group**.

Singular chain complex of a topological space over $\mathbb{Z}$ is a chain complex of Abelian groups.

- Singular chain complex over $\mathbb{Z}$ functor on topological spaces
 - Homotopy invariance of singular homology functor on topological spaces
 - Exact sequences in singular chain complex from inclusions
- sett.Top.complex sing.Z.sheaf ?
- reduced homology
- relative homology
- local homology

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- structures based on sets
 - Topological spaces
 - complex sing
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And it has 1 siblings.

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