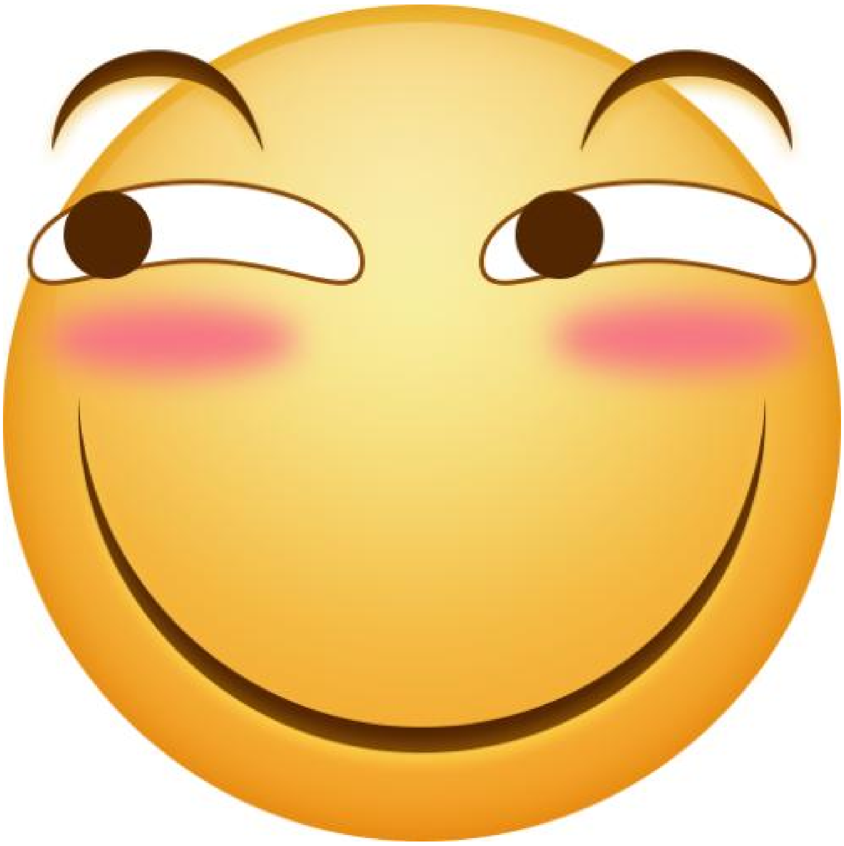
Complexes and Homology



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Complexes and Homology

Definition 1. Let $A_\bullet$ and $B_\bullet$ be two complexes in $\mathcal{A}$ and $\varphi_\bullet, \psi_\bullet : A_\bullet \to B_\bullet$ be two morphisms of complexes. A *homotopy* between $\varphi_\bullet$ and $\psi_\bullet$ is a collection of morphisms $h_n : A_n \to B_{n-1}$ such that

$$\varphi_n - \psi_n = \mathrm{d}_{B_{n+1}} \circ h_n + h_{n-1} \circ \mathrm{d}_{A_n}.$$

In diagram, we have