

# Flatness of functors indexed by $\mathbf{Sing}_A(M)$

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## Abstract

I will introduce the singular category  $\mathbf{Sing}_A(M)$  of an  $A$ -module  $M$  and derive sufficient flatness conditions for some functors  $\mathbf{Sing}_A(M) \rightarrow A\text{-Mod}$ . More precisely,  $\mathbf{Sing}_A(M)$  is the full subcategory of  $A\text{-Mod} \downarrow M$  whose objects have finitely generated free  $A$ -modules as domains. A functor  $F : \mathbf{Sing}_A(M) \rightarrow A\text{-Mod}$  is said to be flat if the higher homology of  $\text{hocolim } F$  is trivial. The main point of this talk will be to show that if  $A$  is noetherian, then for every  $M$  the forgetful functor  $U_M : \mathbf{Sing}_A(M) \rightarrow A\text{-Mod}$  taking  $\sigma : A^n \rightarrow M$  to  $A^n$  is flat.