

ABSTRACT. The deformation complex of an algebra over a colored PROP  $\mathbf{P}$  is defined in terms of a minimal (or, more generally, cofibrant) model of  $\mathbf{P}$ . It is shown that it carries the structure of an  $L_\infty$ -algebra which induces a graded Lie bracket on cohomology.

As an example, the  $L_\infty$ -algebra structure on the deformation complex of an associative algebra morphism  $g$  is constructed. Another example is the deformation complex of a Lie algebra morphism. The last example is the diagram describing two mutually inverse morphisms of vector spaces. Its  $L_\infty$ -deformation complex has nontrivial  $l_0$ -term.

Explicit formulas for the  $L_\infty$ -operations in the above examples are given. A typical deformation complex of a diagram of algebras is a fully-fledged  $L_\infty$ -algebra with nontrivial higher operations.