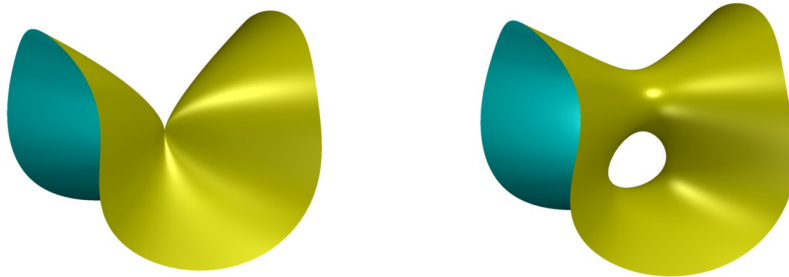


# Lectures on Deformation Theory

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*Deformation theory* is an important topic in algebraic geometry and singularity theory. It has very formal, abstract algebraic aspects but comes alive via geometrical examples and applications. This series of lectures tries to give an overview of this beautiful and rich subject, obviously a near impossible task, but I will do my best. No previous knowledge of the field will be assumed and the main emphasis will be on examples and applications. Working on the exercises will make clear that deformation theory is to a large extent *learning by doing*.

Tentative list of Lectures:

1. The Idea of Deformation Theory.
2. Infinitesimal Deformations and Obstructions.
3. Functors of Artin rings.
4. The Cotangent Complex.
5. Applications to Singularities.
6. The Projection method.
7. the Picture method.

Lecture notes will be made available, but there exists already some good books on Deformation Theory.

*Lectures on Deformations of Singularities*,  
by M. Artin, Bombay, Tata Institute, (1976).

*Introduction to Singularities and Deformations*,  
by G.-M. Greuel, C. Lossen, E. Shustin, Springer Monographs in Mathematics, Springer (2007).

*Lectures on Deformation Theory*,  
by R. Hartshorne, Springer (2004).

*Deformations of Complex Spaces*,  
Russian. Math. Surveys **31**:3, (1976).

*Deformations of algebraic varieties with  $\mathbf{C}^*$ -action*,  
by H. Pinkham, , Asterisque **20**, (1974).

*Deformations of algebraic Schemes*,  
by E. Sernesi, Springer Grundlehren (2010).

*Deformations of Singularities*,  
by J. Stevens, Lecture Notes in Mathematics **1811**, Springer (2003).