Title: Deformations and higher structures in algebra, geometry and physics

Abstract: Deformation theory consists of a set of tools for understanding how mathematical objects behave under "small changes". Deformation theory also plays a central role in the passage from classical mechanics to quantum mechanics. In very low dimensions, such deformations can easily be described by hand, but already in slightly higher dimensions such computations quickly get out of hand.

After a brief introduction to deformation theory, I will give an overview of novel techniques to tackle the practical and theoretical hurdles one encounters and survey some of the prominent problems in algebra, geometry and physics that can be solved in this way.