Introduction to Novel Topological Methods in Algebraic Geometry

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102 Bradley Hall, 4:00 pm
(Tea 3:30 pm Math Lounge)

Abstract

The history of topological methods in algebraic geometry started more than 50 year ago when André Weil formulated his famous conjectures. A lot of scheme invariants of a cohomological nature were introduced since that time and many classical problems were solved in that way. However, until the mid-90^s it was unclear whether cohomology theories on schemes can be represented by objects of some category playing the same role as the category of spectra does in topology.

There was a revolutionary change in the situation after works of Voevodsky and collaborators. Their approach gave us a lot of new cohomology theories on schemes and also raised many interesting questions. For example, we can try to look at some old results from algebraic K-theory or étale cohomology from the new point of view, considering them as particular cases of statements holding for much wider classes of cohomology theories.

I'm going to give an elementary exposition of several results of this kind using an axiomatic approach that should help us to hide most of the technical difficulties.

This talk should be accessible to graduate students.