

Department of Mathematics, BGU

Algebraic Geometry and Number Theory

On Wednesday, January, 10 2018

At 15:10 – 16:30

In Math 101-

Gennady Lyubeznik (University of Minnesota)

will talk about

The de Rham homology and cohomology of complete local rings

Abstract: De Rham homology and cohomology of algebraic varieties over a field of characteristic 0 were studied by R. Hartshorne in a 1975 paper. In the same paper Hartshorne gave an analogous definition for complete local rings of equicharacteristic 0 and proved that in this complete local case the properties of de Rham homology and cohomology were similar to the global case. In particular, both in the local and in the global case there exist Hodge-to-deRham spectral sequences for homology and cohomology. In the local case one gets those spectral sequences from surjecting a regular local ring onto the local ring in question (and in the global case by embedding the algebraic variety in question into a regular algebraic variety)..

Recently my student Nick Switala proved the following in the complete local case: beginning with the E_2 page the Hodge-to-deRham spectral sequences both for homology and cohomology are finite-dimensional and the isomorphism classes of those spectral sequences depend only the local ring in question, not on the surjection from a regular local ring. I am going to explain Switala's results in my talk.