1077-11-1861 **David Zureick-Brown*** (david.zureick.brown@gmail.com), 628 W. College Ave., Decatur, GA 30030. *Rigid cohomology for algebraic stacks.*

Rigid cohomology is one flavor of Weil cohomology. This entails for instance that one can associate to a scheme X over $\mathbb{F}_p$ a collection $H^i(X)$ of finite dimensional $\mathbb{Q}_p$-vector spaces (and variants with supports in a closed subscheme or compact support), which enjoy lots and lots of nice properties (e.g. functoriality, excision, Gysin, duality, a trace formula – basically everything one needs to give a proof of the Weil conjectures).

Classically, the construction of rigid cohomology is a bit complicated and requires many choices, so that proving things like functoriality (or even that it is well defined) are theorems in their own right. An important recent advance is the construction by le Stum of an 'Overconvergent site' which computes the rigid cohomology of X. This site involves no choices and so it trivially well defined, and many things (like functoriality) become transparent.

In this talk I'll explain a bit about classical rigid cohomology and the overconvergent site (beginning with an exposition of characteristic 0 analogues), and explain some new work generalizing rigid cohomology to algebraic stacks (as well as why one would want to do such a thing). (Received September 21, 2011)