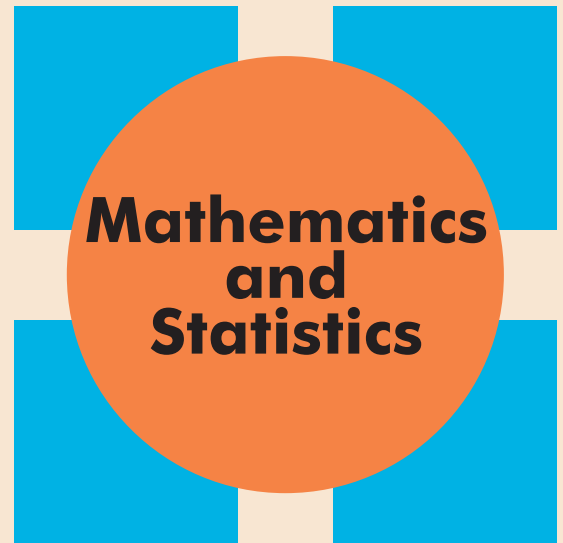


COLLOQUIUM

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Descent and Higher Stacks



Date: Friday February 1, 2019

Time: 3:30 - 4:30 PM

Room: CL 305

Abstract: In geometry, we commonly encounter the idea of patching together objects to form a global object. For instance, a vector bundle over a space can be constructed from the data consisting of local trivializations and transition matrices. The idea of glueing together objects leads naturally to the ideas of sheaves and stacks. The concept of stack is particularly useful for understanding how to classify certain kinds of objects up to isomorphism. For instance, the glueing data specification of a line bundle leads to the cohomological classification of line bundles over a space.

However, sometimes we encounter the idea of wanting to classify objects up to a notion weaker than isomorphism. For instance, to compute derived functors, we often want to take the projective resolution of a module (A projective module is an algebraic analogue of the concept of vector bundle). These projective resolutions are well-defined up to isomorphism of homology groups. The desire to classify objects up to weaker notions of equivalence leads to the concept of higher stack.

It turns out that the glueing data involving weak equivalences is best understood in terms of glueing data involving some kind of higher structure which augments the category in question, such as a simplicial enrichment. This kind of glueing data can be understood in terms of my branch of mathematics: local homotopy theory.