Department of Mathematics,
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Zoom for Thought

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An informal introduction to descent

Abstract:

In geometry, one often starts with a base space (e.g. a manifold, or a variety, etc) and is interested in constructing global objects over the base. One of the ways to construct these global objects is to glue them over the base from simpler local data.

For example, one builds global vector bundles by first describing them locally as products and then gluing them via isomorphisms satisfying certain cocycle conditions. Said more abstractly, one tries to recover the 'category' of vector bundles on the base by looking at the 'category' of vector bundles on 'small open' sets on the base. The fact that one can do this is succinctly summarised by saying that the 'category' of vector bundles satisfies *descent* on open sets over topological spaces. More provocatively, one says that the 'category' of vector bundles is a *stack* over the base. This abstraction is not just decorativethe analogous statement fails for isomorphism classes of vector bundles!

In this talk I will discuss this and other ideas which go under the collective name of descent. The first half will be an informal introduction to descent with minimal prerequisites. The second half will discuss counterparts of these ideas in the context of algebraic geometry and commutative algebra, although again with minimal prerequisites.

Tuesday, November 30, 2021
2:00 PM
Please see email with subject "Graduate Student Seminar Information."

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