

COURSE TITLE: Orbifolds, Field Theories and Strings: A Mathematical Perspective.

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The purpose of this course is to show how ideas coming from physics such as field theories and strings can help illuminate the geometry and topology of orbifolds and stacks. In turn Orbifolds and stacks will inform the relation between field theories in mathematical physics and non-commutative geometry.

Lecture 1. What is an orbifold?

In this lecture I shall attempt to explain the evolution of the concept of an orbifold and its modern subtle incarnation as stacks.

Lecture 2. Orbifolds and Non-commutative Geometry

Orbifolds give an entry to the beautiful field of non-commutative geometry.

Lecture 3. Feynman Integrals and Field Theories.

The mythology of Feynman integrals motivates the mathematical definition of a Field Theory.

Lecture 4. Orbifolding Field Theories.

All the characters get together for some action.