Course: AN INTRODUCTION TO ALGEBRAIC STACKS

Barbara Fantechi

CONTENTS:

1. Etale topology, functor of points of a scheme, algebraic spaces; moduli problems, fine and coarse moduli spaces. Groupoids, groupoids in a category, groupoid fibrations, stacks.

2. Definition of algebraic stack. Examples: quotient stacks, moduli stacks. Morphisms to an algebraic stack, algebraic stacks as a 2-category; fibered products. Representable morphisms, charts. (Quasi)coherent sheaves on a stack. properties of stacks and moprphisms (smoothness, separatedness, properness, etc).

3. More examples: modular forms, moduli spaces of stable curves and maps, Witten and Gromov-Witten invariants. The special case of orbifolds.

Course: ABELIAN COVERS OF ALGEBRAIC VARIETIES

Rita Pardini

AIM:

The purpose of this course is to introduce a technique that has proven useful, especially in the theory of algebraic surfaces, to construct interesting varieties and families of varieties and to test general conjectures.

CONTENTS:

Double covers. Finite group actions on complex manifolds, quotient singularities. Structure theorem for abelian covers. Natural deformations of abelian covers. Applications and examples.