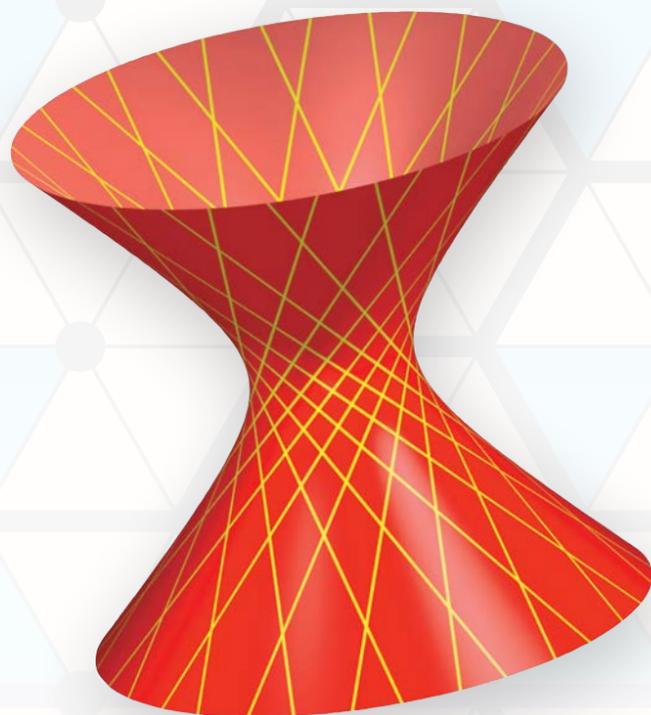




A Program of the **Institute for Advanced Study** and **Princeton University**

# Aspects of Algebraic Geometry

May 11–22, 2015



SURFACE GRAPHICS: DR. OLIVER LABS

### LECTURERS

**Elizabeth Beazley** Haverford College  
**Lucia Caporaso** Università degli Studi Roma Tre  
**Wei Ho** University of Michigan  
**Claire Voisin** École Polytechnique

### ORGANIZERS

**Sun-Yung Alice Chang** Princeton University  
**Antonella Grassi** University of Pennsylvania  
**Dusa McDuff** Barnard College and Columbia University  
**Christine Taylor** Princeton University

## Beginning Lectures

### **Grassmannians and Flag Varieties** / Elizabeth Beazley

The Grassmannian is the set of all subspaces of a vector space that are the same size, and flags more generally are chains of subspaces. While these ideas clearly involve linear algebra, flags also turn out to be projective varieties that enjoy rich geometric, topological, and combinatorial structure. This course will focus on the topology of flag varieties, as well as important subvarieties that encode classical problems in enumerative geometry.

### **Algebraic Curves over Finite Fields** / Wei Ho

This course will study the arithmetic and geometry of algebraic curves, especially over finite fields. The remarkable properties of the zeta function for a curve over a finite field, which gives a close link between the arithmetic of the curve (such as the number of rational points) and its geometry (such as the genus), will be explored.



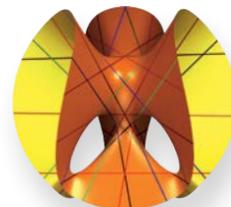
## Advanced Lectures

### **Moduli Space of Curves** / Lucia Caporaso

As a set, the moduli space of curves is the set of isomorphism classes of (nonsingular, connected, projective) algebraic curves. It is endowed with a natural structure of algebraic variety that reflects many interesting properties of the curves themselves. The moduli space of curves and its compactifications play an important role in several areas of algebraic geometry, arithmetic, and other areas of mathematics. This session will discuss their basic properties, sketch their construction, and explain some recent research directions involving them.

### **Birational Invariants** / Claire Voisin

Rational and birational maps are very important in algebraic geometry, as there are very few true morphisms. This lecture will discuss very classical questions around the characterization of varieties, from birational to projective space, and describe the many different methods and ideas that have been used classically or recently to study these questions.



This intensive mentoring program, sponsored by the National Science Foundation, is for undergraduate, graduate, and postdoctoral women in mathematics. It will take place on the campus of the Institute for Advanced Study in Princeton, N.J., and will include lectures, seminars, and panel discussions on a wide range of topics of interest to women mathematicians.

**Prerequisite for this year's program is undergraduate knowledge in abstract algebra and topology.**

Application and Information:

**[www.math.ias.edu/wam/2015](http://www.math.ias.edu/wam/2015)**

Application Deadline: **February 20, 2015**

All participants receive support for shared lodging, meals, and transportation.



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Women and Mathematics

Please Post: *Aspects of Algebraic Geometry 2015*



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