The birational geometry of moduli spaces. Izzet Coskun

Abstact: In these lectures, I will describe recent developments in running the minimal model program on moduli spaces such as the moduli space of curves, the Kontsevich moduli space of stable maps and the Hilbert scheme of points on smooth, projective surfaces. The emphasis will be on examples. I will introduce the main ideas using low genus and small degree examples.

Degeneration techniques for linear series on curves. Brian Osserman

Abstract. Many basic questions about algebraic curves can be expressed in terms of linear series, and studied in terms of degeneration techniques. We discuss the most versatile such technique: the Eisenbud-Harris theory of limit linear series for curves of compact type. We give a new description of the theory which leads to more robust constructions, and survey a number of applications. We also briefly indicate how these ideas can be generalized to nodal curves which are not of compact type.

Moduli spaces of vector bundles on curves. Montserrat Teixidor i Bigas

Abstract. I will describe some aspects of the geometry of the moduli space of vector bundles on curves, the analogs of Brill-Noether theory and the theta divisor and the role that vector bundles play in studying questions about line bundles.