

## **Topic: CM-regularity**

### **The geometry of Castelnuovo-Mumford regularity**

Matt Larson, Stanford University

Castelnuovo-Mumford regularity is a tool for proving effective versions of Serre vanishing. I will explain why this is frequently necessary throughout algebraic geometry. I will also define Castelnuovo-Mumford regularity, state its basic properties, and explain its relationship to syzygies of graded module.

### **Computing the Multigraded Castelnuovo-Mumford Regularity**

Mahrud Sayrafi, University of Minnesota

Motivated by toric geometry, Maclagan-Smith defined the multigraded Castelnuovo-Mumford regularity. While this definition reduces to the usual regularity for saturated modules in  $P^n$ , some properties of the classical regularity are not yet proven to be true in the multigraded case, while others hold true with subtle differences that illuminate the differences in geometry. In this talk I will focus on the case of a product of projective spaces and describe an algorithm for computing the multigraded regularity for saturated modules implemented in Macaulay2.