Combinatorial (mostly toric) methods in interpolation theory

Rick Miranda

Colorado State University

We will discuss the problem of finding the dimension of the linear system of plane curves of degree d having n general multiple points. One of the standard techniques (to prove that the actual dimension is the expected one) is to use the semi-continuity of the dimension, and to demonstrate a convenient degeneration that exhibits the expected dimension. Most approaches in the past have degenerated the points to special position; we degenerate the plane itself. Convenient degenerations are provided by toric methods, and we will describe these. We will then give the interpolation applications for double points and for triple points, and make some remarks for general multiplicities as well. The work is joint with C. Ciliberto, O. Dumitrescu, and J. Roe'.