



UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

Colloquium

Dr. Claudia Polini
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“Studies on curve singularities”

Abstract:

The goal of the talk is to relate the singularity types of a rational plane curve to the syzygies of the forms parametrizing it. This is a report on joint work with Cox, Kustin, and Ulrich. More specifically, let C be a rational plane curve of degree d parametrized by three forms, which can be assumed to be of degree d as well. The syzygy matrix of this parametrization is a 2 by 3 matrix whose entries are forms of degrees d_1 and d_2 , where $d_1 + d_2 = d$. Among other things we consider curves of even degree $d = 2c$; we show that if C has a singular point (including an infinitely near singular point) of multiplicity at least c , then the multiplicity of this singularity is exactly c and furthermore $d_1 = d_2 = c$. We establish, essentially, a correspondence between the constellation of multiplicity c singularities on or infinitely near C on the one hand and the shapes of the syzygy matrices on the other hand. Using this, we give a stratification of the space of rational plane curves into irreducible locally closed sets, according to the constellation of singularities of maximal multiplicity c .

Wednesday, March 6th, 2013

Surge 284

Tea Time 3:40 p.m. – Talk Begins 4:10 p.m.