



Berlin
Mathematical
School

BMS Friday Colloquium

Friday, 4 June 2010, 2:00 pm

Tea before the lecture starts at 1 pm

BMS Loft, Urania
An der Urania 17, 10787 Berlin



Ciro Ciliberto (U Roma 2 - Tor Vergata):

"Geometric Aspects of Polynomial Interpolation in More Variables"

Given h pairs (z_i, m_i) , $i=1, \dots, h$, with z_i complex numbers and m_i positive integers, there is, up to a constant factor, a unique polynomial $f(x)$ in $C[x]$ of degree $d = m_1 + \dots + m_h$, vanishing at z_i with multiplicity m_i , for each $i = 1, \dots, h$. This is nothing else than Ruffini's theorem which one learns at high school.

The situation is much more complicated for two or more variables. If we fix points p_i in the affine space A^n and multiplicities m_i , $i = 1, \dots, h$, the vector space of polynomials of a given degree d in x_1, \dots, x_n , vanishing at the points p_i with the given multiplicities, may well have dimension larger than the expected, even if the points are general enough. These systems are called special.

In this talk, **Ciro Ciliberto** will mainly restrict to the planar case $n = 2$, which is complicated enough since even there speciality is not yet understood, but at least there is a leading conjecture in the field. Indeed, he will explain how a family of special systems, called (-1) -special arise. They are conjectured to be the only ones, if the points are general: this is the Segre–Harbourne–Gimigliano–Hirschowitz conjecture, which is related to another famous conjecture by Nagata, which, in turn, can be expressed in terms of the Mori cone of the plane blown-up at the points in question. **Ciro Ciliberto** will explain what the best results in this field are, trying to give an idea about the techniques used to prove them.

