Seminari de Geometria Algebraica 2007/2008 (UB-UPC)
Dilluns 21 d'abril de 10:00 a 12:00 a l'aula 007 FME (UPC)
http://atlas.mat.ub.es/sga

Growth of degrees of polynomial maps of $\mathbb{C}^2$ and dynamics I

Charles Favre
CNRS-IMJ,França

General abstract

Suppose one is given a dominant polynomial map $F : \mathbb{C}^2 \to \mathbb{C}^2$. Its degree $\deg(F)$ then determines its general behavior F near infinity.
When interested in the dynamics of F, one is naturally lead to study the sequence $\deg(F^n)$ and try to control it when n tends to infinity. The general aim of this mini-course is to describe in details this sequence following my recent work in collaboration with S. Boucksom and M. Jonsson. In particular we shall show that the sequence $\deg(F^n)^{1/n}$ admits a limit (called the asymptotic degree) which is always a quadratic integer; and that $\deg(F^n)$ satisfies a finite linear recurrence relation with integer coefficients. These results are the building blocks for a finer dynamical analysis of the map F.

Talk 1: Presentation of the main results and examples

We start by recalling the situation in the one dimensional case, and introduce the notion of Green function and filled-in Julia set. Before stating the main theorems that are the objective of the course, we shall give some basics on polynomial maps of $\mathbb{C}^2$, and study several key examples (skew products, automorphisms, monomial maps).
