HENRI DE THELIN
University Paris 11

Dynamics of meromorphic maps on compact Kahler manifolds

In these talks, I will recall first some dynamical quantities like entropies, dynamical degrees, Lyapounov exponents and I will give some links between these quantities. As an application we will obtain that for a meromorphic map on a compact Kahler manifold, a measure of maximal entropy is hyperbolic. At the end of my talks, I will explain a criterion in order to construct these measures of maximal entropy.

JEFF DILLER
University of Notre Dame

Holomorphic maps and entropy: Background and guiding principles

I will discuss some basic dynamical and geometric notions that are useful for studying meromorphic maps on compact Kahler manifolds. I will prove Gromov's upper bound for the entropy of a holomorphic self-map on projective space. Then I will present a scheme for finding invariant measures that realize this upper bound.

Rational surface maps: geometric issues

Restricting my attention to compact rational surfaces, I will reviewing some useful geometric facts about blowups, intersection, and cohomology. Given a rational self-map on a compact surface, I will discuss the linear pullback action it induces on cohomology, and in particular the notion of 'algebraic stability'. Then I will describe some ways in which the rational map can be broadly classified by the spectral properties of the pullback action.

Rational surface maps: analytic issues

In this talk, I discuss the construction and analysis of canonical invariant measures of maximal entropy for rational surface maps with 'low topological degree'. I explain how, under fairly general circumstances, this measure can be obtained as the wedge product of forward and backward invariant currents associated to the maps. I explain the notion of laminarity for a positive closed (1,1) current, the product structure associated to a measure obtained by intersecting two laminar currents, and how this can be exploited to understand dynamics.

MATTIAS JONSSON
University of Michigan

Surface dynamics and the Riemann-Zariski space

In my three talks I will survey some results developed jointly with Sebastien Boucksom and Charles Favre for holomophic (or meromorphic) selfmaps of surfaces. The general idea is to work "asymptotically in space", by blowing up everything you could possibly blow up.

The first talk concerns the dynamics of dominant meromorphic surface maps. Typically one interested in constructing interesting invariant currents and measures. To do so, a common approach is to first construct invariant cohomology classes. Unfortunately, this often requires finding a bimeromorphic model where the map becomes algebraically stable. The existence of such a model is not known in general. One might expect that such a model could be obtained by blowing up the orginal space finitely many times. By blowing up the space "everywhere", one obtains the Riemann-Zariski space. I will show that the cohomological aspects of the dynamics are usually very well behaved on this space.

Superattracting fixed points

I will show how the space of valuations on the ring of holomorphic germs can be used to study local holomorphic dynamics in dimension two. This approach is paricularly fruitful in the superattracting case.

Polynomial dynamics at infinity

In the third lecture I will discuss the dynamics of polynomial mappings in dimension two. In particular, I will prove that the existence of compactifications of C2 on which the dynamics is well behaved. Although the statements are relatively easy to formulate, the proofs are quite subtle and combines ideas from the first two lectures.

NESSIM SIBONY
Universite Paris-Sud

Equidistribution problems in holomorphic dynamics

Holomorphic dynamics in Several variables has interractions with ergodic theory,dynamical systems and also algebraic Geometry and number theory. In these lectures we will study equidistribution problems for analytic sets. Let f be a meromorphic map of a compact Kahler manifold M.Let S be an analytic set of codimension p in M.The problem is to describe the distribution of (normalized) preimages of S under the iterates of f.Even the case of points is subtle.We will treat this question for holomorphic endomorphisms of Pk and for polynomial automorphisms of Ck. We will introduce the theory of Super-potentials which provides a useful calculus on positive closed (p,p) currents for arbitrary p.It permits to obtain quantitative results on the speed of equidistribution. This is joint work with T.C Dinh.The background is described in the notes:Dynamics in Several Complex Variables:endomorphisms of projective spaces and polynomial like mappings:ArXiv 08100811.v