Journée Géométrie et Dynamique Complexe
September 9th – Institut Denis Poisson – Orléans

Christophe Dupont (Rennes)

Title: On semi extremal endomorphisms of CP(2)

Abstract: Let f be a rational map of degree $d > 1$ on $\mathbb{CP}(1)$ and let μ be its equilibrium measure. The Lyapunov exponent of μ is bounded below by $(1/2)\log d$, with equality if and only if f is Lattès. Similar results hold for endomorphisms of $\mathbb{CP}(2)$, involving techniques of several complex variables (pluripotential theory, normal forms). In particular, the two Lyapunov exponents of the equilibrium measure are extremal, equal to $(1/2)\log d$, if and only if f is Lattès. In this talk, I will survey examples, results, and questions concerning endomorphisms of $\mathbb{CP}(2)$ having only one extremal exponent.

Charles Favre (Polytechnique)

Title: Degeneration of rational maps

Abstract: (Joint work with Chen Gong) I'll explain how to attach in a canonical way a non-Archimedean dynamical system to any degenerating sequence of rational maps of a fixed degree d at least 2.

Rohini Ramadas (Warwick)

Title: Degenerations and irreducibility problems in rational dynamics

Abstract: The n-th Gleason polynomial G_n is a polynomial in one variable with $\mathbb{Z}$-coefficients, whose roots correspond to degree-2 polynomials with an n-periodic critical point (i.e., to the period-n components of the Mandelbrot set). Per_n is a (nodal) Riemann surface parametrizing degree-2 rational functions with an n-periodic critical point. Two long-standing open questions are: (1) Is G_n irreducible over $\mathbb{Q}$? (2) Is Per_n connected? I will sketch an argument showing that if G_n is irreducible over $\mathbb{Q}$, then Per_n is connected. In order to do this, we find a special degeneration of degree-2 rational maps that tells us that Per_n has a smooth point with $\mathbb{Q}$-coordinates "at infinity".

Duc-Viet Vu (Köln)

Title: Singularities of closed positive currents

Abstract: I will discuss my recent joint work with Do and Su about an optimal upper bound for the volumes of components of Lelong upper level sets of closed positive currents. Our method uses both the theory of relative non-pluripolar products and density currents.

Davis Witt-Nyström (Göteborg)

Title: Competitive Hele-Shaw flows and quadratic differentials

Abstract: This talk is based on joint work with Fredrik Viklund. In the classical Hele-Shaw flow, a domain in the complex plane grows according to the gradient of its Green's function, thus modeling the propagation of a viscous fluid trapped in a thin layer. We introduce a competitive version of the flow where several domains in the complex plane (or more generally in a Riemann surface of finite type) similarly strive to expand but at the same time hinder each other. Interestingly, stationary flows correspond to a special class of quadratic differentials whose associated half-translation surfaces have a simple description. We also introduce a discrete model, closely related to Propp's competitive erosion model, which conjecturally allows us to simulate the flow.

Timetable

Time	Event
09h30	Welcome
10h00 — 11h00	Dupont
11h15 — 12h15	Vu
12h15 — 14h00	Lunch
14h00 — 15h00	Favre
15h15 — 16h15	Witt Nyström
16h45 — 17h45	Ramadas