Complex Dynamics: Iterations, Foliations and Evolutions

Oslo, Gabelshus hotel, June 19 - 23 2017

PROGRAM AND ABSTRACTS

**This conference is part of the special year
on Several Complex Variables and Complex Dynamics
at the Centre for Advanced Studies in Oslo**

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CAS
OSLO

	Monday June 19	Tuesday June 20	Wednesday June 21	Thursday June 22	Friday June 23
09:15 - 10:00		Shaw	Brinkschulte		Bedford
10:05-10:15	Scientific Director				
10:15 - 11:00	Bonifant	Pereira	Rebelo	Ohsawa	Ueda
11:15 - 12:00	Sibony	Dinh	Fornæss	Benini	Raissy
12:00 - 13:30	Lunch break	Lunch break	Lunch break	Lunch break	
13:45-14:30	Vivas	Arosio	Roth	Firsova	
14:45 - 15:30	Diller	Shishikura	Kohr	Peters	
18:00 - 22:00			Boat dinner		

Leandro Arosio

Title: TBA

Abstract: TBA

Eric Bedford

Title: TBA

Abstract: TBA

Anna Miriam Benini

Title: Wandering and Baker domains for transcendental Henon maps.

Abstract: A transcendental Henon map is a map $F : \mathbb{C}^2 \to \mathbb{C}^2$ of the form $F(z,w) = (f(z) + aw, z)$ where $f : \mathbb{C} \to \mathbb{C}$ is a transcendental entire function and a is a constant. In particular, F has constant Jacobian. Driving our inspiration from the dynamics of transcendental entire functions in one variable, we construct examples of transcendental Henon maps of the following types: 1-F has a wandering domain (a component of the Fatou set which is not eventually periodic) whose orbits converge to infinity; 2-F has a wandering domain whose orbit accumulates both at infinity and in a compact set; 3- F has a Baker domain, that is a periodic Fatou component on which the iterates converge to infinity but which is not an attracting basin for infinity.

Araceli Bonifant

Title: Moduli space for real or complex curves in $\mathbb{P}^2$

Abstract: (Joint with John Milnor.) In this talk I will define the moduli space $\mathbb{M}_n(\mathbb{R})$ or $\mathbb{M}_n(\mathbb{C})$ for real or complex plane curves. It will consist of projective equivalence classes of suitably restricted curves. Of course $\mathbb{M}_n(\mathbb{C})$ is related to the classical moduli space $\mathcal{M}_g$ of conformal equivalence classes of Riemann surfaces of genus g.

Judith BrinkSchulte

Title: Levi-flat CR manifolds in projective spaces

Abstract: The non-existence conjecture of smooth closed Levi-flat real hypersurfaces in the complex projective plane ist still open. I will discuss some aspects of this conjecture, including a joint result with M. Adachi on curvature restrictions of Levi-flat real hypersurfaces in complex projective planes.

Jeff Diller

Title: Real dynamics of rational surface automorphisms

Abstract: Building on earlier work of Bedford and Kim, we consider the real dynamics of some automorphisms of complex rational surfaces with real coefficients. By analyzing the action on the first homology group, we identify some families with maximal real entropy. We also note some ways in which this action mimics that of the action of the corresponding complex automorphism on the second homology group. Nevertheless, the actions can be quite different, and in some cases we find that the real entropy is less than the complex entropy. This is joint work with Kyounghee Kim.

Tien-Cuong Dinh

Title: Large deviation theorem for zeros of polynomials and random matrices.

Abstract: We give abstract versions of the large deviation theorem for the distribution of zeros of polynomials and apply them to the characteristic polynomials of random Hermitian matrices. We obtain new estimates related to the local semicircular law for the empirical spectral distribution of these matrices when the 4th moments of their entries are controlled. A similar result will be given for random covariance matrices. Our techniques are borrowed from the theory of complex dynamical systems. This talk is partly based on a forthcoming paper with Duc-Viet VU.

Tanya Firsova

Title: TBA

Abstract: TBA

John Erik Fornæss

Title: Disc Bundles

Abstract: This is joint work in progress with Fusheng DENG. We investigate foliations of some disc bundles with Leviflat boundaries.

Gabriela Kohr

Title: Recent results and applications of Loewner theory in higher dimensions

Abstract: In this talk we survey various results related to Loewner chains, the generalized Loewner differential equation, and Herglotz vector fields on the Euclidean unit ball $\mathbb{B}^n$ in $\mathbb{C}^n$. Extremal problems and recent results related to the family $S^0(\mathbb{B}^n)$ will be also discussed. This talk is based on joint work with Ian Graham (Toronto), Hidetaka Hamada (Fukuoka) and Mirela Kohr (Cluj-Napoca).

Takeo Ohsawa

Title: On the local pseudoconvexity of certain families of $\mathbb{C}$.

Abstract: For a class of weakly 1-complete $\mathbb{C}$ bundles over compact Riemann surfaces, for which canonical plurisubharmonic exhaustion functions on the total spaces are known, some cases are described where such functions can be extended to a plurisubharmonic exhaustion function on analytic families of the $\mathbb{C}$ bundles. The nonextendable cases are also discussed.

Jorge V. Pereira

Title: Compact leaves of holomorphic foliations

Abstract: The talk will focus on codimension one singular holomorphic foliations on projective manifolds having a compact leaf. It will discuss the following problems: existence of a foliation having as a leaf a given hypersurface with topologically torsion normal bundle, study of foliations having a compact leaf whose holonomy is abelian (resp. solvable) and factorization results. (joint work with B. Claudon, F. Loray and F. Touzet)

Han Peters

Title: TBA

Abstract: TBA

Jasmine Raissy

Title: TBA

Abstract: TBA

Julio C. Rebelo

Title: On the structure of harmonic measures: examples and results.

Abstract: We will discuss the problem of regularity for harmonic measures both in the contexts of foliations on the projective plane and of (finitely generated) diffeomorphism groups on the circle. In the first case, examples of foliations carrying harmonic currents whose support is a singular analytic Levi-flat will be provided along with other similar situations. In the case of the circle, we will talk about a general regularity result for a large class of groups.

Oliver Roth

Title: Is there a Teichmüller principle in higher dimensions?

Abstract: The underlying theme of Teichmüller's papers in function theory is a general principle which asserts that every extremal problem for univalent functions of one complex variable is connected with an associated quadratic differential. The purpose of this paper is to indicate a possible way of extending Teichmüller's principle to several complex variables. This approach is based on the Loewner differential equation.

Mei-Chi Shaw

Title: L^2-Dolbeault Cohomology Groups on Annuli

Abstract: The Dolbeault cohomology measures the obstruction to solving the Cauchy-Riemann equations. The range of the Cauchy-Riemann operator is closed in some topological space if and only if the corresponding Dolbeault cohomology group is Hausdorff. In this talk we will report some recent new results on the L^2 closed range property for $\overline{\partial}$ on an annulus between two pseudoconvex domains, when the inner domain is not smooth. In particular, we show the Hausdorff property of the L^2 Dolbeault cohomology group on a domain between a ball and a bi-disc, the so-called Chinese Coin problem. Our methods also give Sobolev W^1-estimates for the $\overline{\partial}$-equations on non-smooth domains, including certain product domains or intersection of smooth bounded pseudoconvex domains. One can characterize Lipschitz domains with holes through their L^2-Dolbeault cohomology (joint work with Debraj Chakrabarti, Siqi Fu, and Christine Laurent-Thiébaut).

Mitsuhiro Shishikura

Title: TBA

Abstract: TBA

Nessim Sibony

Title: Equidistribution problems in complex dynamics of higher dimension.

Abstract: Equidistribution of the orbits of points, subvarieties or of periodic points in complex dynamics is a fundamental problem. It is often related to strong ergodic properties of the dynamical system and to a deep understanding of analytic cycles, or more generally positive closed currents, of arbitrary dimension and degree. I will survey some of the recent results. If time permits ,I will discuss the corresponding results for Foliations by Riemann surfaces.

Tetsuo Ueda

Title: TBA

Abstract: TBA

Liz Vivas

Title: TBA

Abstract: TBA