

Complex geometry and complex dynamics in higher dimensions

期間：平成 30 年 6 月 27 日（水） 10:00-17:00

場所：大阪市立大学 杉本キャンパス 理学部 E 棟 大講究室 E408

プログラム

10:00-11:00, Yusuke Okuyama (Kyoto Inst. Tech.)

Title: An a priori bound of endomorphisms on CP^k and its non-archimedean counterpart

Abstract: We will give an a priori bound of the proximity between the iterations of a holomorphic endomorphism of CP^k of degree > 1 and a non-constant endomorphism of CP^k , using the domination principle from Bedford-Taylor's study of pluripotential theory. The key is determining when the equilibrium measure has a positive mass on the boundary of an eventually cyclic Fatou component, which in the dimension $k = 1$ case yields "no lakes of Wada" theorem and the dynamical counterpart to Abikoff's theorem on the residual Julia/limit set. We will also mention a similar a priori bound on non-archimedean dynamics.

11:15-12:15, Gabriel Vigny (Univ. Picardie Jules Verne)

Title: Entropy of holomorphic maps acting on analytic sets

Abstract: Let $f : X \rightarrow X$ be a dominating meromorphic map on a compact Kähler manifold X of dimension k . We extend the notion of topological entropy $h_{top}^l(f)$ for the action of f on (local) analytic sets of dimension $0 \leq l \leq k$. For an ergodic probability measure ν , we extend similarly the notion of measure-theoretic entropy $h_\nu^l(f)$.

Under mild hypothesis, we compute $h_{top}^l(f)$ in term of the dynamical degrees of f . In the particular case of endomorphisms of P^2 of degree d , we show that $h_{top}^1(f) = \log d$ for a large class of maps but we give examples where $h_{top}^1(f) \neq \log d$. This is a joint work with Henry De Thélin.

13:30-14:30, Takato Uehara (Saga)

Title: A construction of non-projective K3 surfaces from rational surfaces

Abstract: In this talk, we construct K3 surfaces by gluing two rational surfaces given by 9-point blowups of the complex projective plane, where the existence of overlaps is guaranteed by Arnol'd's theorem. A calculation of their period maps shows that such K3 surfaces constitute a large family, including non-projective K3 surfaces. Furthermore, we comment on a relation with automorphisms of K3 surfaces having positive entropy. This is a joint work in progress with T. Koike.

14:45-15:45, Takayuki Koike (Osaka City Univ.)

Title: Arnol'd's type theorems on a neighborhood of a curve and gluing construction of K3 surfaces

Abstract: Arnol'd showed the uniqueness of the complex analytic structure of a small neighborhood of a non-singular elliptic curve embedded in a non-singular surface whose normal bundle satisfies Diophantine condition in the Picard variety. We show an analogue of this Arnol'd's theorem for a neighborhood of a rational curve with a node. As an application, we construct a K3 surface by patching two open complex surfaces obtained as the complements of tubular neighborhoods of such curves embedded in blow-ups of the projective planes at general nine points.

16:00-17:00, Masanori Adachi (Shizuoka)

Title: On a hyperconvex manifold without non-constant bounded holomorphic functions

Abstract: We will discuss in detail the Grauert tube of a hyperbolic surface as an example of a hyperconvex manifold without non-constant bounded holomorphic functions. Two complex analytic proofs for the Liouville property will be given, which do not rely on Hopf's ergodicity theorem.