

Program

Dano Kim

On Demailly approximation of plurisubharmonic functions

We show by an example that the well-known Demailly approximation of plurisubharmonic functions is not necessarily a decreasing sequence in general.

Boyong Chen

Hörmander's L^2 estimate and the Ohsawa–Takegoshi extension theorem

We show the Ohsawa–Takegoshi extension theorem can be deduced directly from Hörmander's L^2 estimate. We also give a new Hörmander type L^2 estimate as well as several applications to function theory of Bergman spaces.

Taeyong Ahn

Equidistribution in higher codimension for holomorphic endomorphisms of P^k

In this talk, we discuss equidistribution phenomena. As a tool, we study super-potentials introduced by T. C. Dinh and N. Sibony in [1] and present some difficulties in higher codimensional cases. Then, using Lojasiewicz inequality, we briefly show a new result on equidistribution in higher codimensional cases.

[1] Dinh, Tien-Cuong and Sibony, Nessim, *Super-potentials of positive closed currents, intersection theory and dynamics*, Acta Mathematica September 2009, **203**, Issue 1, 1–82.

Jujie Wu

Removable singularities of plurisubharmonic functions and extension of L^2 holomorphic functions on complete Kähler domains

We prove a Siu type result on extension of plurisubharmonic functions across complete pluripolar subsets. Related results on extension of L^2 approximation of holomorphic functions are also obtained.

Shin-ichi Matsumura

A Nadel vanishing theorem for metrics with minimal singularities on big line bundles

In this talk, we study singular metrics with non-algebraic singularities, their multiplier ideal sheaves and a Nadel type vanishing theorem for them, from the view point of complex geometry. The Nadel vanishing theorem can be seen as an analytic version of the Kawamata–Viehweg vanishing theorem of algebraic geometry. The main purpose of this talk is to establish such a

theorem for the multiplier ideal sheaf of a metric with minimal singularities, for the cohomology with values in a big line bundle.

Shin Kikuta

The limits on boundary of orbifold Kähler-Einstein metrics and orbifold Kähler-Ricci flows over quasi-projective manifolds

In this talk, we consider a sequence of orbifold Kähler–Einstein metrics or orbifold normalized Kähler–Ricci flows on a projective manifold with ample log-canonical bundle for a simple normal crossing divisor. Tian-Yau, S. Bando and H. Tsuji established that the sequence of the orbifold Kähler–Einstein metrics converged to the complete Kähler–Einstein metric of negative Ricci curvature on the complement of the boundary divisor. The main purpose of this talk is to show that such a convergence is also true on the boundary for both of the orbifold Kähler–Einstein metrics and the orbifold normalized Kähler–Ricci flows.

Xu Wang

Variation of the Bergman kernels under holomorphic motions of complex manifolds

Inspired by Berndtsson’s work on the subharmonicity property of the Bergman kernel, we give a local variation formula of the full Bergman kernels associated to holomorphic motions of complex manifolds. An equivalent criterion for the triviality of holomorphic motions of planar domains in terms of the Bergman kernel is given as an application.

Takeo Ohsawa

A survey on extension theorems with L^2 growth conditions

By giving a survey of L^2 extension theorems for holomorphic functions, including recent works of B.-Y. Chen, Z. Blocki and X.-Y. Zhou, an insight will be looked for into the role of Oka’s picture of several complex variables in the forthcoming years of mathematics.

Toshihiro Nose

Newton polyhedra and oscillatory integrals

We study the asymptotic behavior at infinity of oscillatory integrals. The rates of decay for oscillatory integrals are given in a simple geometric way in terms of Newton polyhedra under some conditions. In this talk, we introduce some results of asymptotic analysis of oscillatory integrals.

Qiming Yan

Uniqueness theorem for p -adic holomorphic curves intersecting hyperplanes without counting multiplicities

In this talk, we prove a uniqueness theorem for p -adic holomorphic curves into $\mathbb{P}^n(\mathbb{C}_p)$ sharing $2n + 2$ hyperplanes located in general position without counting multiplicities.

Liyou Zhang

On the intrinsic derivatives of holomorphic mappings

In 1979, Qikeng Lu introduced some kind of intrinsic derivatives for the holomorphic mappings on bounded domains in \mathbb{C}^n . Recently, using this intrinsic derivative, Lu considered the embedding from bounded domains into the infinite dimensional Grassmanian manifold, and the so called conformal Bergman metric on bounded homogeneous domains. I will talk about both the definition of the intrinsic derivative and the above two applications.

Lishuang Pan

On the Kähler–Einstein metrics of Bergman–Hartogs domains

We study the complete Kähler–Einstein metric of a Hartogs domains built on any bounded homogeneous domains D in \mathbb{C}^n . The generating function of the Kähler–Einstein metric satisfies a complex Monge–Ampère equation with Dirichlet boundary condition. We reduce the Monge–Ampère equation to an ODE and solve it explicitly for a special value s_0 of s . This generalizes the previous conclusions when D is the Euclidean unit ball in \mathbb{C}^n , or one of the bounded symmetric domains.

Satoshi Yamaji

Toeplitz operators on weighted Bergman spaces of a minimal bounded homogeneous domain

We give criteria for the boundedness of Toeplitz operators on weighted Bergman spaces of a minimal bounded homogeneous domain in terms of the Berezin symbol of the symbol. Moreover, we estimate the essential norm of bounded Toeplitz operators. These estimates give us necessary and sufficient conditions for Toeplitz operators to be compact.

Kang-Tae Kim

On the semicontinuity theorems of Automorphism Groups

Classic theorem by D. Montgomery and H. Samelson says that a compact Lie subgroup G of a compact Lie group admits an open neighborhood having the property that, if any compact group H is contained in this neighborhood, then H is a subgroup of G . This goes with the ancient philosophical saying that harmony is easy to destroy but restoring it requires a definite effort. This has manifested in geometry and complex analysis as definite theorems. I shall present a survey as well as report on the recent work with Robert E. Greene. Also a few research problems will be discussed along this line.

References:

- [1] Greene, Kim and Krantz: The geometry of complex domains, Birkhauser “Progress in Math” v 291, 2011. (and see the references therein).
- [2] Greene, Kim: Stably interior points and the semicontinuity of the automorphism group, arXiv:1306.3303v1 [math.CV] 14 jun 2013.

Kiyoki Tanaka

Toeplitz operators on harmonic Bergman spaces

We consider the harmonic Bergman spaces on smooth bounded domains in \mathbb{R}^n . It is well known that the harmonic Bergman space has the reproducing kernel called the harmonic Bergman kernel. In this talk, we discuss the modified harmonic Bergman kernel introduced by B. R. Choe, H. Koo, H. Yi and applications to the Toeplitz operators by using its kernel.

Tomoyuki Hisamoto

Norms of a test configuration and K-stability

We give an analytic description of the norms of a test configuration and discuss the notion of K-stability in view of energy functionals on the space of Kähler metrics.

Ninh Van Thu

On the existence of tangential holomorphic vector fields vanishing at an infinite type point

The purpose of this talk is to investigate the holomorphic vector fields tangent to a real hypersurface in \mathbb{C}^2 vanishing at an infinite type point.

Yoshikazu Nagata

Integral representations and uniform estimates for d-bar on convex domains in \mathbb{C}^2 .

I will talk about homotopy formulas for d-bar equations on a smooth bounded domain and then give sup-norm estimates and Hölder estimates on convex-domains in \mathbb{C}^2 .

Na Li

Earle slices for once punctured torus

We will study Earle slices of quasi-fuchsian space for once punctured torus associated to orientation reversing automorphisms of once punctured torus of order 2. First we classify Earle slices into two types: rhombic Earle slices and rectangular Earle slices. Then we study the configuration of Earle slices. Especially, we obtain a necessary and sufficient condition for two Earle slices intersect.