The 32nd Symposium on Complex Geometry (Kanazawa) 2026

	November 23	November 24	November 25	November 26	November 27
9:15-9:30		tea	tea	tea	tea
9:30-10:30		Ohsawa	Conlon	Namikawa	Kobayashi
10:50-11:50		Yoshikawa	Takahashi	Fujino	Mabuchi
Lunch					
13:45-14:00	tea	tea	tea	tea	
14:00-15:00	Ono	Kanazawa	Hattori	Long Li	
15:20-16:20	Miyatake	Hasegawa	Hada	Hamano	
16:40-17:40		Gomes	Kotani	Katsuta	

Venue: The Kanazawa Chamber of Commerce & Industry （金沢商工会議所 大会議室）

November 23

14:00-15:00 Takashi Ono (RIMS)

Title: Manton's Vortex Equations and Anti-Self-Dual Connections

15:20-16:20 Natsuo Miyatake (Tohoku University)
Title: Equilibrium Metrics and Complete Harmonic Metrics

November 24

9:30-10:30 Takeo Ohsawa (Nagoya University)
Title: A survey on Hartogs type theorems

10:50-11:50 Ken-Ichi Yoshikawa (Kyoto University)
Title: On the behavior of analytic torsion for twisted canonical bundles under degenerations

14:00-15:00 Atsushi Kanazawa (Waseda University)
Title: Generalized Calabi-Yau manifolds of complex dimension 2 and 3

15:20-16:20 Keizo Hasegawa (The University of Osaka)
Title: The universal covering and small deformations of left invariant complex structures on nilmanifolds

16:40-17:40 Lucas H. S. Gomes (The University of Osaka)
Title: Kobayashi-Hitchin correspondence on equivariant bundles and basic bundles

November 25

9:30-10:30 Ronan J. Conlon (The University of Texas at Dallas)
Title: Uniqueness of shrinking Kähler-Ricci solitons on resolutions of Kähler cones

10:50-11:50 Atsushi Takahashi (The University of Osaka)
Title: Frobenius manifold for the nodal quiver

14:00-15:00 Masafumi Hattori (Kyoto University)
Title: K-moduli of quasimaps

15:20-16:20 Yohei Hada (Kyoto University)
Title: Slope stability and wall structures on Sasakian manifolds

16:40-17:40 Ryota Kotani (Institute of Science Tokyo)
Title: Principal twistor models and asymptotic hyperkähler metrics

November 26

9:30-10:30 Yoshinori Namikawa (Kyoto University)
Title: A characterization of toric hyperkähler varieties among symplectic singularities

10:50-11:50 Osamu Fujino (Kyoto University)
Title: A characterization of projective space via lengths of extremal rays

14:00-15:00 Long Li (ShanghaiTech University)
Title: On the Guedj-Rashkovskii zero mass conjecture

15:20-16:20 Sachiko Hamano (Kyoto Sangyo University)
Title: Complex directional spans under pseudoconvex deformations of open Riemann surfaces

16:40-17:40 Shuhei Katsuta (Nagoya University)
Title: A new approach to Weyl–Ahlfors theory

November 27

9:30-10:30 Ryoichi Kobayashi (Nagoya University)
Title: Measure Concentration Phenomenon in Diophantine Geometry

10:50-11:50 Toshiki Mabuchi (The University of Osaka)
Title: An inductive step in the invariance problem of plurigenera

Abstracts

November 23

Takashi Ono (RIMS)
Title: Manton's Vortex Equations and Anti-Self-Dual Connections
Abstract: The relationship between vortex equations and anti-self-dual (ASD) Yang-Mills equations through dimensional reduction has been studied for many years. However, except in some special cases, the global geometric data underlying this relationship have not been made explicit. In this talk, I will explain how to construct ASD connections from solutions of four of Manton's five vortex equations on a general Riemann surface. More precisely, we explicitly construct the underlying equivariant holomorphic bundles and invariant (pseudo-)Hermitian metrics whose associated connections satisfy the ASD equations. We also discuss the converse construction, which recovers solutions of vortex equations from suitable equivariant ASD connections.

Natsuo Miyatake (Tohoku University)
Title: Equilibrium Metrics and Complete Harmonic Metrics
Abstract: Let X be a compact Riemann surface. For a positive line bundle $L \to X$, a continuous Hermitian metric $e^{-\phi}h_*$ on L, and a nonpolar compact subset $K \subseteq X$, one can construct an equilibrium metric from the envelope of subharmonic weight functions bounded above by ϕ on K. The approximation of equilibrium metrics by sequences of semipositive singular Hermitian metrics has been studied in a variety of contexts, including complex geometry, potential theory, dynamical systems, and probability theory.

In this talk, I will introduce two functions, entropy and free energy, associated with a semipositive singular Hermitian metric on the canonical bundle, an integer $r \geq 2$, and a nonzero real number β. These quantities are defined by extending the construction, due to Li–Mochizuki, of complete harmonic metrics on cyclic Higgs bundles to the setting of complete Hermitian metrics associated with semipositive singular Hermitian metrics on the canonical bundle that are not necessarily induced by holomorphic r-differentials. Given an equilibrium metric and a sequence of semipositive singular Hermitian metrics approximating it, I will formulate the problem of determining whether the associated entropy increases and the associated free energy decreases when these metrics are suitably pulled back to the canonical bundle of a Riemann surface. I will initiate the study of this problem and establish several quantitative results. I will also present several examples of approximations of equilibrium metrics to which my results apply. Furthermore, I will discuss the asymptotic expansion of a lower bound for the entropy.

November 24

Takeo Ohsawa (Nagoya University)
Title: A survey on Hartogs type theorems
Abstract: A survey will be given on the extensions of the following results of Hartogs.

1. Analytic continuation from the boundary of bounded domains.
2. Analyticity of continuous functions whose graphs are pseudoconcave.

The emphasis is put on the application of the L^2 method.

Ken-Ichi Yoshikawa (Kyoto University)
Title: On the behavior of analytic torsion for twisted canonical bundles under degenerations
Abstract: Consider a degeneration of projective algebraic manifolds over a curve, and suppose that the total space carries a Nakano semi-positive vector bundle. We focus on

the relative canonical bundle twisted by this vector bundle, and investigate the asymptotic behavior of the logarithm of the analytic torsion of the regular fibers with coefficients in this bundle. We show that the logarithm of the analytic torsion admits an asymptotic expansion near the discriminant locus, whose leading term is a logarithmic singularity, while the subdominant term is given by a log-log-type singularity. Furthermore, we provide a formula for the coefficient of the leading term in terms of an integral of characteristic classes associated with the semi-stable reduction of the family. To establish these results, we prove the existence of an asymptotic expansion for the L^2-metric in this setting. If time permits, we will also discuss an explicit formula for the case where the singular fibers have only isolated singularities. This talk is based on the preprint: arXiv:2602.14797v1.

Atsushi Kanazawa (Waseda University)
Title: Generalized Calabi-Yau manifolds of complex dimension 2 and 3
Abstract: Generalized Calabi-Yau (CY) geometry, introduced by Hitchin, serves to unify CY and symplectic geometry. In this talk, I will focus on complex dimensions 2 and 3, with a view toward mirror symmetry. In dimension 2, these structures provide a natural setting for generalizing Dolgachev's mirror symmetry for lattice-polarized K3 surfaces, where the key lies in the Mukai lattice polarization. In dimension 3, the situation remains mysterious, as topological, cubic, and Chern obstructions hinder the existence of type 2 pure spinors.

Keizo Hasegawa (The University of Osaka)
Title: The universal covering and small deformations of left invariant complex structures on nilmanifolds
Abstract: I will talk about the recent results of two joint papers in which the conjectures I myself formally stated twenty years ago have been proved: (1) any left invariant complex structure on a simply connected nilpotent Lie group is biholomorphic to $\mathbb{C}^n$ (arXiv:2606.31448, the joint work with Rollenske, Sillari, Tomassini and Wehler); and (2) Small deformations of left invariant complex structures on nilmanifolds are left invariant (atXiv:2607.26786, the joint work with Sillari and Tomassini). In the paper referred in (2), the main result is the resolution of another long standing conjecture on Dolbeault cohomology of complex nilmanifolds.

Lucas H. S. Gomes (The University of Osaka)
Title: Kobayashi-Hitchin correspondence on equivariant bundles and basic bundles
Abstract: For foliated manifolds, a transverse version of the Kobayashi-Hitchin corre-

spondence was introduced by Baraglia and Hekmati, who in particular showed that it holds for any compact Sasakian manifold. In this talk, we introduce a G-equivariant version of the Kobayashi-Hitchin correspondence for non-Kähler manifolds and a connected non-compact Lie group G. We then discuss its equivalence with the transverse correspondence when the action of G defines a suitable foliation on the manifold. As an application, we show that a $\mathbb{C}$-equivariant Kobayashi-Hitchin correspondence holds for Vaisman manifolds, and explain how the transverse correspondence for compact Sasakian manifolds can be recovered from this equivalence. This is joint work with Hisashi Kasuya and Takashi Ono.

November 25

Ronan J. Conlon (The University of Texas at Dallas)
Title: Uniqueness of shrinking Kähler-Ricci solitons on resolutions of Kähler cones
Abstract: Shrinking gradient Kähler-Ricci solitons model finite-time singularities of the Kähler-Ricci flow on compact Kähler manifolds. I will discuss the uniqueness problem for such solitons in the non-compact setting, presenting a result for resolutions of Kähler cones. This talk is based on joint work with Alix Deruelle.

Atsushi Takahashi (The University of Osaka)
Title: Frobenius manifold for the nodal quiver
Abstract: We will discuss the naturally normalized primitive form and the Frobenius structure associated to the Weierstrass $\wp$-function. We also plan to give the construction of the Frobenius structure via elliptic Weyl group invariants of type A_1, as well as the isomorphism between these two Frobenius structures via the period mappings. A relation to the space of stability conditions for a partially wrapped Fukaya category will also be explained.

Masafumi Hattori (Kyoto University)
Title: K-moduli of quasimaps
Abstract: In this talk, we regard the base curve of a Calabi-Yau fibration as a quasimap and introduce the notion of K-moduli of quasimaps. Using this framework, we address the K-moduli wall crossing for quasimaps and the K-moduli conjecture for Calabi-Yau fibrations over curves whose generic fibers are either abelian varieties or hyperkähler manifolds. Based on joint works with Kenta Hashizume (arXiv:2504.21519) and Yota Maeda.

Yohei Hada (Kyoto University)
Title: Slope stability and wall structures on Sasakian manifolds
Abstract: In this talk, I will discuss how slope stability of torus-linearized transverse holomorphic vector bundles on compact Sasakian manifolds changes as the Reeb vector varies while the underlying CR structure remains fixed. This variation admits an algebraic description: it corresponds to changing the real grading of a fixed multigraded module over the coordinate ring of the affine cone. I will explain the equivalence between transverse slope stability and graded module stability, and discuss approaches to the variation problem from differential geometry and algebraic geometry. The main results establish openness of stability and show that only finitely many Harder-Narasimhan filtrations occur as the Reeb vector varies, yielding a finite chamber decomposition of the Reeb cone. I will conclude with explicit examples on the conifold exhibiting nonlinear walls and a nonconvex stable locus.

Ryota Kotani (Institute of Science Tokyo)
Title: Principal twistor models and asymptotic hyperkähler metrics
Abstract: In this talk, we first review the background of algebraic hyperkähler metrics with asymptotic behavior and twistor spaces, and introduce a complex manifold called the principal twistor model (PTM). We then present the main theorem on the universality of the PTM and its application to the moduli space. The universality of the PTM is as follows: Let X be a conical symplectic variety admitting a crepant resolution Y. If the regular locus of X admits a hyperkähler cone metric g_0, then the twistor space of any algebraic hyperkähler metric g on Y asymptotic to g_0 is uniquely recovered by slicing the PTM. In the second half of the talk, we construct the PTM based on the theory of universal Poisson deformations and explain the proof of its universality.

November 26

Yoshinori Namikawa (Kyoto University)
Title: A characterization of toric hyperkähler varieties among symplectic singularities
Abstract: Recently we have completed a characterization of a toric hyperkähler variety that admits a symplectic resolution. The present talk is based on two articles arXiv:2603.27454 and arXiv:2408.03012.

Osamu Fujino (Kyoto University)
Title: A characterization of projective space via lengths of extremal rays
Abstract: We prove a new characterization of complex projective space using lengths of extremal rays. Our approach uses Bend-and-Shatter, a generalization of Bend-and-Break. This is joint work with E. Jovinelly, B. Lehmann, and E. Riedl.

Long Li (ShanghaiTech University)
Title: On the Guedj-Rashkovskii zero mass conjecture
Abstract: The zero mass conjecture, raised by Guedj and Rashkovskii, states that the residual Monge-Ampere mass of a plurisubharmonic function must be zero if its Lelong number vanishes at a given point. We will briefly recall the history of this conjecture, and provide a counter-example to it. Finally, some further development of this conjecture will be mentioned in a general setting.

Sachiko Hamano (Kyoto Sangyo University)
Title: Complex directional spans under pseudoconvex deformations of open Riemann surfaces
Abstract: A natural question in complex geometry is how pseudoconvexity of a total space constrains analytic invariants of its fibers. We study this for the total space $\mathcal{R}$ of a smooth family of marked open Riemann surfaces $R(t)$ of fixed finite genus g over a disk in the complex plane, using periods of hydrodynamic differentials as fiberwise invariants.

For a nonzero $\boldsymbol{a} \in \mathbb{R}^g$, two distinguished scalar moduli define an $\boldsymbol{a}$-directional span. Earlier work showed that this span is subharmonic when $\mathcal{R}$ is pseudoconvex. We extend the result to a fixed nonzero $\boldsymbol{c} \in \mathbb{C}^g$. This is not a formal complexification: hydrodynamic differentials with a fixed boundary condition form a real vector space. We normalize one to have A-period vector $\boldsymbol{c}$; its B-periods then involve both $\boldsymbol{c}$ and $\overline{\boldsymbol{c}}$. Using the rotated family parametrized by $\theta \in \mathbb{R}/2\mathbb{Z}$ and the phase-corrected scalar periods $e^{-\pi i\theta}\tau^{\theta}_{\boldsymbol{c}}(t)$, we define the complex-directional span $\rho_{\boldsymbol{c}}(t)$.

Our main formula expresses the second variation of $\mathrm{Im}(e^{-\pi i\theta}\tau^{\theta}_{\boldsymbol{c}}(t))$ as the negative of the sum of a boundary term involving the Levi curvature of $\partial\mathcal{R}$ and an interior Dirichlet energy term. Hence $\rho_{\boldsymbol{c}}$ is subharmonic when $\mathcal{R}$ is pseudoconvex. The harmonic case is characterized by holomorphic variation of the normalized differentials and constancy of the span.

Shuhei Katsuta (Nagoya University)
Title: A new approach to Weyl–Ahlfors theory

Abstract: In 1941, L. Ahlfors established his celebrated theorem on defect relations for holomorphic curves in complex projective space by refining a method introduced by H. and J. Weyl. Later, M. Cowen and P. Griffiths (1976) and H. Fujimoto (1982) independently gave alternative proofs. In this talk, I will propose a new approach to Weyl–Ahlfors theory from the perspective of Borel–Weil theory.

November 27

Ryoichi Kobayashi (Nagoya University)
Title: Measure Concentration Phenomenon in Diophantine Geometry
Abstract: Vojta (1987) proposed the origin of the similarity observed between Nevanlinna Theory and Diophantine Approximation. In this talk, adding to Vojta's proposal, I would like to visualize how Measure Concentration Phenomenon plays similar roles in "basics" behind two theories, where the "basics" mean the LLD (Lemma on Logarithmic Derivative) in Nevanlinna Theory and the Schmidt Strong Subspace Theorem (based on the Roth Lemma) in Diophantine Approximation. This is an on-going work joint with Peiqiang Lin (Ningde Normal University).

Toshiki Mabuchi (The University of Osaka)
Title: An inductive step in the invariance problem of plurigenera
Abstract: In this talk, I'll show that, if a generalized version of Deligne-Fujiki-Ueno's injectivity is true, then the invariance of plurigenera for smooth deformations of Kähler manifolds is obtained. My talk is focussed on how Deligne-Fujiki-Ueno's injectivity allows us to obtain a key inductive step in the proof.