

Kinosaki Algebraic Geometry Symposium 2026

城崎代数幾何学シンポジウム 2026

Dates: October 27th (Tue.) – 30th (Fri.), 2026

Venue: Kinosaki International Arts Center (城崎国際アートセンター)
(Yushima 1062, Kinosaki, Toyo-oka, Hyogo 669-6101)

Program

Oct. 27th (Tue.)

9:30 – 10:30 Matthias Schütt (Leibniz Universität Hannover)
10:45 – 11:45 Reimi Irokawa (NTT)
13:30 – 14:30 Ryo Ishizuka (Institute of Science Tokyo)
14:45 – 15:45 Shou Yoshikawa (Institute of Science Tokyo)
16:00 – Poster session

Oct. 28th (Wed.)

9:15 – 10:15 Nao Moriyama (Kyoto University)
10:30 – 11:30 Yuji Odaka (RIMS, Kyoto University)
11:45 – 12:45 Shihoko Ishii (University of Tokyo)

Oct. 29th (Thu.)

9:30 – 10:30 Anya Nordskova (Kavli IPMU)
10:45 – 11:45 Linghu Fan (Kavli IPMU)
13:30 – 14:30 Franco Rota (Université Paris-Saclay)
14:45 – 15:45 Alastair Craw (University of Bath)

Oct. 30th (Fri.)

9:15 – 10:15 Hyeonjun Park (KIAS)
10:30 – 11:30 Mikhail Kapranov (Kavli IPMU)

Titles and Abstracts

Matthias Schütt (Leibniz Universität Hannover)

Numerically and cohomologically trivial automorphisms of elliptic surfaces

Numerically and cohomologically trivial automorphisms form a classical topic in algebraic geometry, especially for algebraic surfaces. I will focus on the case of complex elliptic surfaces of Kodaira dimension one, which features some surprising results, also in view of past claims. Much of this will be motivated by the instructive case of Enriques surfaces. (Joint work with Catanese, Frapporti, Gleißner and Liu)

Reimi Irokawa (NTT)

Hybrid dynamics of cohomologically hyperbolic automorphisms of complex projective surfaces

We study degenerating families of hyperbolic dynamics over complex projective surfaces by means of the theory of hybrid spaces by Boucksom, Favre, and Jonsson. For an analytic family of hyperbolic automorphisms $\{f_t: X_t \rightarrow X_t\}_{t \in \mathbb{D}^*}$ over projective surfaces X_t that is possibly meromorphically degenerating at the origin, we consider the family of invariant measures $\{\eta_t\}$ on X_t constructed by Cantat. The family f_t induces a hyperbolic automorphism $f_{\mathbb{C}((t))}^{\text{an}}: X_{\mathbb{C}((t))}^{\text{an}} \rightarrow X_{\mathbb{C}((t))}^{\text{an}}$ over the induced non-archimedean projective surface, where we also have a measure η_0 by Filip. Our main theorem states the weak convergence of $\{\eta_t\}$ to η_0 as $t \rightarrow 0$ over the induced so-called hybrid space.

Ryo Ishizuka (Institute of Science Tokyo)

Hodge–Tate splitting and Akizuki–Nakano vanishing in positive characteristic I

For smooth projective varieties in characteristic zero, Hodge-to-de Rham spectral sequence degenerates and Akizuki–Nakano vanishing theorem holds. However, both statements can fail in positive and mixed characteristic. Deligne and Illusie proved that, for a smooth variety X in characteristic p admitting a W_2 -lifting and satisfying $p > \dim X$, de Rham complex decomposes and this implies the above degenerations and vanishings. More recently, Petrov used the geometry of the de Rham stack to obtain such a decomposition for smooth quasi- F -split varieties without any dimension restriction.

When such a decomposition exists, the natural map to the de Rham complex admits a retraction. In this talk, I will explain how, conversely, the existence of such a retraction, which we call Hodge–Tate splitting, implies a decomposition of the de Rham complex by using the geometry of de Rham stacks. I will also discuss the corresponding logarithmic theory for SNC divisors and an application to mixed characteristic. This is joint work with Shou Yoshikawa.

Shou Yoshikawa (Institute of Science Tokyo)

Hodge–Tate splitting and Akizuki–Nakano vanishing in positive characteristic II

Following the talk “Hodge–Tate splitting and Akizuki–Nakano vanishing I”, I will continue the discussion of Hodge–Tate splitting, focusing in particular on examples and applications. I will present characterizations of Hodge–Tate splitting for Fano and Calabi–Yau varieties, and discuss when Hodge–Tate splitting is preserved under various algebraic constructions, including blow-ups, projective bundles, and linearly reductive quotients. I will also explain its relation to quasi- F -splitting.

Nao Moriyama (Kyoto University)

Subtleties in the minimal model theory for log surfaces without assuming $\mathbb{Q}$ -factoriality or log canonicity

The minimal model program (MMP) and the abundance conjecture are central problems in birational geometry. The MMP for log surfaces holds under standard assumptions, such as $\mathbb{Q}$ -factoriality or log canonicity. In this talk, we show that the MMP for log surfaces fails in general. On the other hand, intriguingly, we also mention that the abundance theorem still holds for log surfaces in such a setting where the MMP fails. This talk is based on the author’s preprint (arXiv:2602.00732) and joint work with Makoto Enokizono (arXiv:2609.12478).

Yuji Odaka (RIMS, Kyoto University)

Canonical torus action on symplectic singularities

For symplectic singularities, we reveal the presence of intrinsic canonical (local) action of $\mathbb{H}^*$ on each of them, where $\mathbb{H}$ is the Hamilton quaternion, though conditionally for now. Its subaction of $\mathbb{C}^*$ satisfies a certain canonicity (“K-polystability”/hyperKähler structure) which we explain. Weaker version was predicted by Kaledin decades ago. Joint with Y. Namikawa. cf., arXiv:2503.15791

Shihoko Ishii (University of Tokyo)

On Kawamata–Viehweg and Lipman Vanishings

The birational Kawamata–Viehweg vanishing theorem (KVV for short) is known to hold in considerable generality in equal characteristic zero. By contrast, it fails in general in positive characteristic. Nevertheless, it may still hold for certain types of birational morphisms.

In his 2008 paper in the Michigan Mathematical Journal, Lipman studied sequences of blow-ups at closed points over regular schemes, including in mixed characteristic, and stated a vanishing theorem that we call “Lipman’s goal statement”. This can be viewed as a special form of KVV. Although the argument in that paper is incorrect, this does not imply that the goal statement itself is false.

In this talk, we prove the goal statement under either of the assumptions, (1) the schemes are essentially of finite type over a perfect field k of characteristic $p \geq N - 1$, where N is their dimension, or (2) the schemes have dimension at most 3.

Anya Nordskova (Kavli IPMU)

Infinitely many braid group orbits

I will present an example of a smooth projective variety X for which the braid group action on the set of full exceptional collections in $D^b(X)$ is not transitive and in fact has infinitely many orbits. Although the idea behind the construction is quite simple and the example is not at all exotic, this is the first case where such non-transitivity has been observed in the realm of smooth projective varieties. If time permits, I will also comment on another curious “disconnectedness” phenomenon. Namely, I will try to explain why the space of Bridgeland stability conditions $\text{Stab}(X)$ on X has infinitely many connected components.

Linghu Fan (Kavli IPMU)

The wild age of linear p -cyclic quotient singularities

In this talk, we consider the quotient singularities associated to some special linear actions of finite groups without pseudo-reflections. In characteristic 0, the age grading on the group, which relies on the existence of the primitive roots of unity, is useful to study the properties of the quotient singularities. On the other hand, when the characteristic p is positive, the age grading cannot be defined on the p -subgroups. Instead, the invariant D_V was introduced by Yasuda to study the linear p -cyclic quotients. After a historical overview to the invariant D_V , we will illustrate its role through recent developments, including the criterion for cyclic quotients to be terminal or canonical, the construction of crepant models, and the predicting formulas for the Euler characteristics of crepant resolutions. This talk is based in part on joint work with Hongmin Li.

Franco Rota (Université Paris-Saclay)

Formal neighborhoods of curves in Calabi–Yau threefolds

An important question in birational and enumerative geometry is that of contractibility of curves in higher dimensional varieties. Motivated by this, I will focus on rational curves in Calabi–Yau threefolds: the most recent results in this direction tie contractibility with non-commutative geometry and deformation theory, through a local model for the formal neighborhood of the curve.

In particular, Brown and Wemyss compute the non-commutative deformation theory of curves whose local model has a specific form (introduced by Katz). I will give a necessary geometric condition for a curve to admit a formal neighborhood in Katz form. This is also sufficient for curves whose normal bundle is $(-1, -1)$ and $(-2, 0)$. I will then present several examples, either new or revisiting construction in the literature through this lens. This is work in progress, joint with M. Wemyss.

Alastair Craw (University of Bath)

The Cautis–Logvinenko conjecture for 3-fold NCCRs

For a finite subgroup G of $\mathrm{SL}(3, \mathbb{C})$, the G -Hilbert scheme is a crepant resolution of the quotient singularity $\mathbb{C}^3/G$, and the universal family induces a derived equivalence between coherent sheaves on G -Hilb and G -equivariant coherent sheaves on $\mathbb{C}^3$. In 2009, Cautis and Logvinenko conjectured that this equivalence sends the simple G -sheaves, one for each nontrivial irreducible representation of G , to pure sheaves on G -Hilb. I will describe how the recent proof of this conjecture with Lin and Yamagishi generalises naturally to all 3-fold noncommutative crepant resolutions for which the vertex simple modules exist.

Hyeonjun Park (KIAS)

Shifted Lagrangian classes

Modern enumerative invariants, such as Gromov–Witten invariants and Donaldson–Thomas invariants, are defined through the virtual classes. In this talk, I will introduce Lagrangian classes, whose existence was conjectured by Joyce, as a generalization of the virtual classes via shifted symplectic geometry. As applications, I will explain the construction of (1) cohomological Hall algebras for 3-Calabi–Yau categories; (2) cohomological field theories for gauged linear sigma models; (3) relative Donaldson–Thomas theory for 4-dimensional log Calabi–Yau pairs; (4) algebraic Fukaya categories for hyperkahler varieties. This is joint work in progress with Adeel Khan, Tasuki Kinjo, and Pavel Safronov.

Mikhail Kapranov (Kavli IPMU)

Supersymmetry, differential operators of infinite order and theta functions

Differential operators of infinite order (DOI) are series in derivatives which converge and define local operators of analytic functions. For example, $\exp(d/dx)$ is not allowed but $\cos \sqrt{d/dx}$ is. Starting from 1972, Sato, Kashiwara, Kawai, Takei, Yoshida and others developed a characterization of $\theta(T)$, the Riemann theta-zero value, by a system of DOI in modular variables alone, thus deducing modularity from local properties.

In the talk I will explain how supersymmetry gives rise to DOI and how a supersymmetric thickening of the Siegel upper half plane gives a natural construction of the modular invariant system of DOI for $\theta(T)$.