Caucher Birkar

Title: From birational geometry to moduli of sheaf stable pairs.

Abstract: In this talk we explain how birational geometry can be used to understand moduli spaces of sheaf stable pairs which originate in enumerative geometry. A sheaf stable pair E,s consists of a torsion-free sheaf E and a collection of global sections s that generate the sheaf generically. To such a stable pair one can associate a stable minimal model.

Paolo Cascini

Title: On the MMP for algebraically integrable foliations.

Abstract: I will survey some recent progress on the Minimal Model Program for algebraically integrable foliations over a complex variety.

Ivan Cheltsov

Title: K-stability of pointless del Pezzo surfaces and pointless Fano threefolds

Abstract: In this talk we will discuss K-stability of pointless del Pezzo surfaces and smooth Fano 3-folds (defined over a non-algebraically closed field of characteristic zero. This is a joint work in progress with Takashi Kishimoto (Saitama), Hamid Abban (Nottingham) and Frederic Mangolte (Marseille).

Adrien Dubouloz

Title: Additive group actions, polar cylinders and rigidity of Brieskon-Pham hypersurfaces

Abstract: I will give an overview of two recent and developing advances concerning applications of the correspondence between anti-canonical polar cylinders in Fano varieties and homogeneous actions of the additive group on the spectra of their anti-canonical rings: one concerns the study of automorphism groups of so-called Brieskorn-Pham affine hypersurfaces via a reduction to well-formed hypersurfaces and the other the construction of natural test configurations for Fano varieties possessing polar cylinders. The talk is based on several joint works in progress with, among others, Michael Chitayat (Ottawa) and Takashi Kishimoto (Saitama).

Thibaut Delcroix

Title: Bubbles on (horo)-symmetric varieties.

Abstract: I will present how Stenzel's Kahler Ricci-flat metrics appear as bubbles in the degeneration of conical Kähler-Einstein metrics on rank 1 horosymmetric varieties (compactifications of homogeneous fibrations with rank 1 complex symmetric spaces fibers). This family of examples contains the case (highlighted numerically by Chi Li) of the Eguchi-Hanson metric as a bubble in the convergence of Kähler-Einstein metrics on P^2, with conic singularities along a quadric, to a singular Kähler-Einstein metric on P(1,1,4). Time permitting, I will then discuss possible higher-rank extensions, where the asymptotically conical Calabi-Yau metrics on symmetric spaces constructed by Biquard and Gauduchon, Biquard and myself, and by Nghiem, should play the role of bubbles.

Tiago Duarte Guerreiro

Title: New examples of Mori Dream Spaces of Picard rank 2 and their birational geometry.

Abstract: Mori dream spaces are a special kind of varieties introduced by Hu and Keel in 2001 that enjoy very good properties with respect to the minimal model program. On the other hand, not many classes of examples of these are known. In this talk we introduce two new sets of examples of Mori dream spaces and explain their birational geometry: Blowups of n-dimensional smooth projective hypersurfaces along complete intersections and hypersurfaces in P^1-bundles over P^n of certain bidegrees.

Kento Fujita

Title: Smooth prime Fano threefolds of degree 22 with infinite automorphism groups.

Abstract: All smooth prime Fano threefolds of degree 22 with infinite automorphism groups are understood due to Prokhorov, Kuznetsov and Shramov by use of deep studies of their Hilbert schemes of lines. I will present as our joint work-in-progress result with Adrien Dubouloz and Takashi Kishimoto an alternative and self-contained proof of it, allowing us to use several properties on the smooth quintic del Pezzo threefold.

Atsushi Ito

Title: On Seshadri constant and Gromov width on toric varieties and lattice width of moment polytopes.

Abstract: Seshadri constant is an invariant which measures the positivity of line bundles on algebraic varieties. It is known that Seshadri constant is closely related to Gromov width, an invariant in symplectic geometry. In this talk, I explain some relations between Seshadri constants and Gromov widths on toric varieties and lattice widths of the moment polytopes.

Igor Krylov

Title: Families of simple subgroups in the Cremona group arising from del Pezzo fibrations.

Abstract: Cremona group of rank n is the group of birational self-maps of the projective space of dimension n. For any subgroup G of Cremona group there is a rational variety on which G acts regularly. This allows to translate the study of subgroups of the Cremona group into the study of G-equivariant geometry of rational varieties. In this talk I will describe some continuous families of rational threefolds with an action of alternating group of rank 5. I will also explain why the corresponding subgroups of the Cremona group are not pair-wise conjugate.

Ayako Kubota

Title: Invariant Hilbert scheme of the Cox realization.

Abstract: The invariant Hilbert scheme is a moduli space of affine schemes that are stable under an action of a reductive algebraic group. It is known to become a candidate for a resolution of singularities of an affine quotient variety under a suitable choice of the parameter. In this talk, we consider the invariant Hilbert scheme associated to the Cox realization of some nilpotent orbit closures of type A.

Frederic Mangolte

Title: Comessatti's theorem on rational surfaces and real Fano threefolds.

Abstract: From the classification of real rational surfaces worked out by Comessatti at the beginning of the 20th century we get the following striking characterization of real rational surfaces: a geometrically rational real surface is rational if and only if its real locus is non-empty and connected. In a work in progress with Andrea Fanelli, we explore real loci of geometrically rational Fano threefolds and study the rationality of these.

Jihun Park

Title: Simply connected positive Sasakian 5-manifolds and log del Pezzo surfaces.

Abstract: Sasakian geometry is a vibrant field at the intersection of differential geometry, topology, and algebraic geometry, with applications ranging from theoretical physics to geometric analysis. In this talk, we explore closed simply connected 5-manifolds capable of hosting positive Sasakian structures. We present a conjectural comprehensive list of such manifolds.

Piotr Pokora

Title: On the geography problem of log-surfaces.

In my talk I will present recent results devoted to the geography problem of log-surfaces. I will present results on the log-Chern slopes for surfaces constructed using conic line arrangements with ordinary singularities in the complex projective plane (joint work with Rita Pardini), and some combinatorial constraints on log-K3 surfaces that can potentially have the log-Chern slope equal to 3.

Sho Tanimoto

Title: Campana rational connectedness and weak approximation.

Abstract: Campana and Abramovich introduced the notion of Campana points which interpolate between rational points and integral points. Recently there are extensive activities on arithmetic geometry of Campana points and many conjectures have been proposed. In this talk we discuss Campana curves/sections in the geometric setting. Campana introduced the notion of Campana rational connectedness and conjectured that any klt Fano orbifold is Campana rationally connected. We prove that weak approximation at good places holds in the setting of Campana sections for any Campana rationally connected fibration. This is a generalization of theorems by Graber-Harris-Starr and Hassett-Tschinkel. A key tool to this theorem is log geometry and the notion of moduli stack of stable log maps. Finally we exhibit example of orbifolds satisfying Campana's conjecture. This is joint work with Qile Chen and Brian Lehmann.

De-Qi Zhang

Title: Equivariant Minimal Model Program and its applications to algebraic and arithmetic dynamics.

Abstract: We report our recent progress on the Equivariant Minimal Model Program (EMMP), the MMP which preserves an endomorphism f of a projective variety with mild singularities. We apply this EMMP to algebraic and arithmetic dynamics, especially to the Kawaguchi-Silverman conjecture (KSC) about the equality of dynamical degree and arithmetic degree of f, and the Zariski Dense Orbit conjecture (ZDO) of f, especially in dimension three (and four, or higher).

Ziquan Zhuang

Title: Essential dimension of isogenies.

Abstract: The essential dimension of a finite map f is the smallest dimension where f is birationally pulled-back from. I'll talk about a lower bound for the essential dimension of isogenies of complex abelian varieties which is sharp in many cases. In particular, we confirm a conjecture of Brosnan that the multiplication-by-m map is incompressible. Joint work with János Kollár.