New Directions in Far from Equilibrium Integrability and Beyond: April 29 – May 3, 2024

Events for:
Monday, April 29th - Monday, May 6th

Monday, April 29th
Tuesday, April 30th
Wednesday, May 1st
Thursday, May 2nd
Friday, May 3rd
Saturday, May 4th
Sunday, May 5th
Monday, May 6th

8:30am **Breakfast - SCGP Cafe**

9:30am **Workshop: János Kollár - SCGP 102**

Speaker: János Kollár

Title: Smoothing Algebraic Cycles Below the Middle Dimension

Abstract: Hironaka proved that the Chow groups CHd(X) are generated by smooth subvarieties if 2d<dimX and d?3. Recently this was extended to all 2d<dimX (with Voisin). The aim of this lecture is to explain the methods and sketch the proof.

10:30am **Coffee Break**

11:00am **Workshop: Christian Schnell - SCGP 102**

Speaker: Christian Schnell

Title: A Hodge-Theoretic Proof of Hwang's Theorem

Abstract: Christian Schnell will explain a Hodge-theoretic proof for Hwang's theorem, which says that if the base of a Lagrangian fibration on an irreducible holomorphic symplectic manifold is smooth, then it must be projective space. The result is contained in a joint paper with Ben Bakker from last fall.

12:00pm **Lunch - SCGP Cafe**

1:15pm **Workshop: Brian Lehmann - SCGP 102**

Speaker: Brian Lehmann

Title: Restriction Theorems for Curves

Abstract: Let X be a smooth projective variety and let E be a vector bundle on X. A common way to analyze E is to fix a family of curves C on X and to study the restrictions of E to C. In this talk, Brian Lehmann will give several qualitative statements describing the behavior of these restrictions. This is joint work with Eric Riedl and Sho Tanimoto.

2:15pm **Coffee Break**

2:45pm **Workshop: Lena Ji - SCGP 102**

Speaker: Lena Ji

Title: Rationality Criteria for Conic Bundle Threefolds Over Non-Closed Fields

Abstract: An algebraic variety over a field k is said to be rational if it is birational to projective space. If a variety is rational over k, then it is geometrically rational, i.e., it becomes rational over the algebraic closure of k. However, in general, the converse need not hold. Rationality over k is well-understood when the dimension is at most 2, but the picture is less clear starting in dimension 3. In this talk, we study rationality obstructions for geometrically rational threefolds. Recently, Hassett and Tschinkel and Benoist and Wittenberg refined the rationality obstruction of Clemens and Griffiths by introducing torsors over the intermediate Jacobian. Their results, together with work of Kuznetsov and Prokhorov, showed that this refined obstruction can be used to characterize k-rationality for Fano threefolds of Picard rank 1. We study the rationality question for a family of threefolds that have Picard rank 2 and admit conic bundle structures. The intermediate Jacobian torsor obstruction does not always characterize k-rationality in this setting, and we explain how the Brauer group of k plays a role. This work is joint with S. Frei, S. Sankar, B. Viray and I. Vogt.

4:15pm **Workshop: Paul Hacking - SCGP 102**

Speaker: Paul Hacking

Title: On The Morrison Cone Conjecture for Calabi--Yau 3-Folds

Abstract: The Morrison cone conjecture asserts that the action of the birational automorphism group of a Calabi-Yau 3-fold on its movable cone admits a rational polyhedral fundamental domain; in particular, there are finitely many orbits of faces of the cone. Paul Hacking will present the following theorem of University of Massachusetts postdoc Wendelin Lutz: If the Morrison cone conjecture holds for a Calabi-Yau 3-fold X, then it holds for any Calabi-Yau 3-fold deformation equivalent to X