Week 2 Schedule

Events for:
Monday, July 8th - Friday, July 12th

Monday, July 8th

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

Title: Breakfast

9:30am **Workshop Mini-course 1: Tamás Hausel - SCGP, 102**

Speaker: Tamás Hausel

Title: Mirror symmetry and big algebras

Abstract: After surveying some mirror symmetry phenomena in the geometry of Langlands dual Hitchin systems, we will model the Hitchin system on cominuscule upward flows by the equivariant cohomology of cominuscule flag varieties like the Grassmannian. Then we will explain how mirror symmetry implies a synthetic BNR correspondence. To generalise to the non-minuscule case we will construct a big commutative subalgebra of the Kirillov algebra to model the mirror of the universal principal bundle in an irreducible representation. We will discuss various aspects of big algebras such as their geometric interpretation in terms of equivariant cohomology of affine Schubert varieties, their symmetries, their anatomy, including their skeletons, multiplicity algebras, nerves and crystals. We will visualize some small examples related to baryon multiplet.

10:45am **Workshop: Coffee Break - SCGP Cafe**

Title: Coffee Break

11:30am **Workshop Mini-course 1: Claire Voisin - SCGP 102**

Speaker: Claire Voisin

Title: The smoothing problem for algebraic cycles

Abstract: The Chow moving lemma allows us to put in general position any cycle on a smooth algebraic variety, which is very important for intersection theory. However, even if we start with a smooth subvariety, the cycles in general position we get by following the Chow method are cycles of singular subvarieties. I will discuss in these lectures the method I developed with Kollár to solve a related question, first asked by Borel and Haefliger, aboutrepresenting any cycle by a cycle of smooth subvarieties, which we solve affirmatively below the middle dimension.

12:45pm **Workshop: Lunch - SCGP Cafe**

Title: Lunch

3:30pm **Tea Break - SCGP Cafe**

Tuesday, July 9th

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

Title: Breakfast

9:30am **Workshop Mini-course 1: Laurent Fargues - SCGP 102**

Speaker: Laurent Fargues

Title: The moduli of G-bundles on the curve

Abstract: I will begin by explaining the basic constructions involving the curve in p-adic Hodge theory as it showed up in my joint work with Fontaine. I will then explain the structure of the moduli of G-bundles on the curve as it shows up in my joint work with Scholze were we use it to construct the semi-simple local Langlands correspondence for any p-adic reductive group. I will at the end explain the structure of the category of etale sheaves on this moduli.

11:00am **Group Photo - SCGP Lobby**

Title: Group Photo

11:30am **Workshop: Lunch - SCGP Cafe**

Title: Lunch

2:00pm **Workshop Moduli Journal Launch Celebration: Denis Nesterov - SCGP 102**

Speaker: Denis Nesterov

Title: On quasimap invariants of moduli spaces of Higgs bundles

2:30pm **Workshop Moduli Journal Launch Celebration: Claire Voisin - SCGP 102**

Speaker: Claire Voisin

Title: ?Symmetric tensors on the intersection of two quadrics and Lagrangian fibration

3:00pm **Tea Break - SCGP Cafe**

3:30pm **Workshop Moduli Journal Launch Celebration: Navid Nabijou - Zoom**

Speaker: Navid Nabijou

Title: ?GV and GW invariants via the enhanced movable cone

4:00pm **Workshop Moduli Journal Launch Celebration: Richard Wentworth - SCGP 102**

Speaker: Richard Wentworth

Title: The algebraic and analytic compactifications of the Hitchin moduli space

5:00pm **Summer Concert Series: Jazz Loft Originals - SCGP 103**

Title: Summer Concert Series: Jazz Loft Originals

Abstract: Sextet to perform all original compositions, slated artists to include: Tom Manuel, world-renowned Ray Anderson, trombone, John Marshall, tenor sax, Steve Salerno, guitar, Dan Pugach, drums, Dean Johnson, bass.

6:15pm **Special Banquet Dinner: Moduli Journal Launch Celebration - SCGP Cafe**

Title: Special Banquet Dinner: Moduli Journal Launch Celebration

Wednesday, July 10th

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

Title: Breakfast

9:30am **Workshop Mini-course 1: Mohammed Abouzaid - SCGP 102**

Speaker: Mohammed Abouzaid

Title: Moduli of A-branes

Abstract: Associated to each group are various spaces of representations. The simplest of these is the space of rank-1 representations, which is an algebraic torus of dimension equal to the rank of the first cohomology. Via the correspondence between representations of the fundamental group of a topological space and local systems on it, one thus associates to each space a variety which can be interpreted as a moduli space of objects in its category of local systems. When the topological space is itself a Lagrangian submanifold of a symplectic manifold, then under some topological hypotheses on the Lagrangian embedding, one can further interpret such representations as objects of the Fukaya category of the ambient symplectic manifold. This is the starting point of the approaches to mirror symmetry which combine the geometric SYZ conjecture and the categorical HMS conjecture to propose tautological explanation of the mirror phenomenon. The main goal of the lecture series will be to present the key ideas which allow one to go beyond the setting of embedded Lagrangians to produce constructions of moduli spaces of A-branes associated to immersed Lagrangians.

10:45am **Workshop: Coffee Break - SCGP Cafe**

Title: Coffee Break

11:30am **Workshop Mini-course 2: Tamás Hausel - SCGP 102**

Speaker: Tamás Hausel

Title: Mirror symmetry and big algebras

Abstract: After surveying some mirror symmetry phenomena in the geometry of Langlands dual Hitchin systems, we will model the Hitchin system on cominuscule upward flows by the equivariant cohomology of cominuscule flag varieties like the Grassmannian. Then we will explain how mirror symmetry implies a synthetic BNR correspondence. To generalise to the non-minuscule case we will construct a big commutative subalgebra of the Kirillov algebra to model the mirror of the universal principal bundle in an irreducible representation. We will discuss various aspects of big algebras such as their geometric interpretation in terms of equivariant cohomology of affine Schubert varieties, their symmetries, their anatomy, including their skeletons, multiplicity algebras, nerves and crystals. We will visualize some small examples related to baryon multiplet.

12:45pm **Workshop: Lunch - SCGP Cafe**

Title: Lunch

3:30pm **Tea Break - SCGP Cafe**

Thursday, July 11th

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Title: Breakfast

9:30am **Workshop Mini-course 2: Claire Voisin - SCGP 102**

Speaker: Claire Voisin

Title: The smoothing problem for algebraic cycles

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Speaker: Laurent Fargues

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11:30am **Workshop Mini-course 3: Tamás Hausel - SCGP, 102**

Speaker: Tamás Hausel

Title: Mirror symmetry and big algebras

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