

# Schedule

Events for:  
**Monday, April 15th - Friday, April 19th**

**Monday, April 15th**

9:00am **Yair Minsky - SCGP 102**

**Title:** Coarse Geometry of Teichmuller Space, Part 1

**Abstract:** Introduction to curve complexes and the coarse geometry of Teichmuller space equipped with natural metrics like Teichmuller, Weil-Petersson and Thurston (Lipschitz) metrics

10:30am **Coffee Break - SCGP Cafe**

11:00am **Carlos Matheus - SCGP 102**

**Title:** Totally Geodesic Subvarieties of Moduli Spaces, Part 1

**Abstract:** Introduction to basic ideas, constructions and examples related to totally geodesic subvarieties of the moduli space and their connections to dynamics of the  $SL(2, \mathbb{R})$  action on moduli spaces and dynamics of polygonal billiards.

12:30pm **Lunch - SCGP Cafe**

2:00pm **Yair Minsky - SCGP 102**

**Title:** Coarse Geometry of Teichmuller Space, Part 2

**Abstract:** Introduction to curve complexes and the coarse geometry of Teichmuller space equipped with natural metrics like Teichmuller, Weil-Petersson and Thurston (Lipschitz) metrics

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

4:00pm **David Auricino - SCGP 102**

**Title:** Trajectories on the Platonic Solids

**Abstract:** Given any of the 5 Platonic solids, can we find a straight-line trajectory on the surface of the solid that starts and ends at the same vertex without passing through any other vertex? It was proven for the tetrahedron, octahedron, cube, and icosahedron that there is no trajectory from a vertex to itself that does not pass through another vertex. We will give a simple proof of this for the tetrahedron and outline two proofs for the other solids. Finally, we will show that there does indeed exist such a trajectory on the dodecahedron, and using translation surfaces, we give a complete classification of such trajectories. All of the necessary theory of translation surfaces will be developed and time permitting, rotation groups of general Platonic surfaces will be discussed. This is joint with Jayadev S. Athreya and Pat Hooper.

**Tuesday, April 16th**

9:00am **Scott Wolpert - SCGP 102**

**Title:** Series: Variations of Riemann surfaces, Part 1

10:30am **Coffee Break - SCGP Cafe**

11:00am **Carlos Matheus - SCGP 102**

**Title:** Totally geodesic subvarieties of moduli spaces, Part 2

**Abstract:** Introduction to basic ideas, constructions and examples related to totally geodesic subvarieties of the moduli space and their connections to dynamics of the  $SL(2, \mathbb{R})$  action on moduli spaces and dynamics of polygonal billiards.

12:30pm **Lunch - SCGP Cafe**

2:00pm **Yair Minsky - SCGP 102**

**Title:** Coarse geometry of Teichmuller space, Part 3

**Abstract:** Introduction to curve complexes and the coarse geometry of Teichmuller space equipped with natural metrics like Teichmuller, Weil-Petersson and Thurston (Lipschitz) metrics

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

4:00pm **John Loftin**

**Title:** Cubic Differentials and Convex Real Projective Structures

**Abstract:** If  $S$  is a closed oriented surface of genus at least 2, then the data of a pair  $(\Sigma, U)$  of a conformal structure  $\Sigma$  and holomorphic cubic differential  $U$  is in one-to-one correspondence with a convex real projective structure  $X$  on  $S$ , in which  $X$  is the quotient of a bounded convex domain in  $\mathbb{R}P^2$  by a representation  $\rho_1$  whose quotient is  $X$ . This result is due independently to the speaker and Labourie. We'll explain the differential geometry and analysis behind this results, and investigate some more degenerate settings at the boundary of the moduli space. One may think of these results as a "higher" analog of the interplay of between hyperbolic and complex geometry in ordinary Teichmuller spaces.

**Wednesday, April 17th**

9:00am **Scott Wolpert - SCGP 102**

**Title:** Series: Variations of Riemann surfaces, Part 2

**Abstract:**

10:30am **Coffee Break - SCGP Cafe**

11:00am **Richard Canary - SCGP 102**

**Title:** Higher Teichmuller spaces and pressure metrics, Part 1

**Abstract:** Introduction to basic ideas, constructions and examples in higher Teichmuller theory, ending with pressure metrics and their basic properties.

12:30pm **Lunch - SCGP Cafe**

**Thursday, April 18th**

9:00am **Carlos Matheus - SCGP 102**

**Title:** Totally geodesic subvarieties of moduli spaces, Part 3

**Abstract:** Introduction to basic ideas, constructions and examples related to totally geodesic subvarieties of the moduli space and their connections to dynamics of the  $SL(2, \mathbb{R})$  action on moduli spaces and dynamics of polygonal billiards.

10:30am **Coffee Break - SCGP Cafe**

11:00am **Richard Canary - SCGP 102**

**Title:** Higher Teichmuller spaces and pressure metrics, Part 2

**Abstract:** Introduction to basic ideas, constructions and examples in higher Teichmuller theory, ending with pressure metrics and their basic properties.

12:30pm **Lunch - SCGP Cafe**

2:00pm **Jason Behrstock - SCGP 102**

**Title:** Quasiflats in hierarchically hyperbolic spaces

**Abstract:** Hierarchically hyperbolic spaces provide a uniform framework for working with many important examples, including mapping class groups, right angled Artin groups, Teichmuller space, and others. In this talk I'll provide an introduction to studying groups and spaces from this point of view. The discussion will center around a theorem for understanding quasiflats in these spaces, thereby resolving a number of well-known questions and conjectures. This is joint work with Mark Hagen and Alessandro Sisto.

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

4:00pm **Math Colloquium: Scott Wolpert - SCGP 102**

**Speaker:** Scott Wolpert

**Title:** Math Colloquium: Prime Geodesic Theorems

**Friday, April 19th**

9:00am **Scott Wolpert - SCGP 102**

**Title:** Series: Variations of Riemann, surfaces 3

**Abstract:**

10:30am **Coffee Break - SCGP Cafe**

11:00am **Richard Canary - SCGP 102**

**Title:** Higher Teichmuller spaces and pressure metrics, Part 2

**Abstract:** Introduction to basic ideas, constructions and examples in higher Teichmuller theory, ending with pressure metrics and their basic properties.

12:30pm **Lunch - SCGP Cafe**