

**Dynamics and Geometry in the Teichmüller Space**  
**July 6 -10, 2015**

**Jon Chaika: On "circle" averages on flat surfaces**

Consider a flat surface and a point  $p$  on that flat surface. Flow for time  $T$  in all directions from  $p$ . Do these "circles" equidistribute? This talk will present progress on this problem: For almost every surface (with respect to any  $SL(2, \mathbb{R})$  invariant measure) the answer is yes except possibly along a set of  $T$  of density 0 (that can depend on the point). The full question remains open and I'll state some other open problems. This is joint work with P. Hubert.

**Ivan Dynnikov: Stability of minimal interval exchange transformations**

It is known (M.Keane, 1975) that a generic irreducible interval exchange transformation (iet) is minimal. We discuss minimality for families of non-generic iet whose parameters are dependent over  $\mathbb{Z}$  and formulate a conjecturable criteria, which is confirmed in many examples, when minimality remains a "typical" property for such a family.

**Filip Simion: Zero Lyapunov exponents of the Kontsevich-Zorich cocycle**

The Kontsevich-Zorich cocycle preserves the symplectic pairing on cohomology and this gives rise to a natural symmetry of the Lyapunov spectrum: for any exponent, its negative also occurs. More generally, as Forni, Matheus, Zorich and others have observed in examples, parts of the cocycle can preserve indefinite hermitian forms and this can force zero Lyapunov exponents. In this talk, I will first discuss the general framework in which one can expect zero exponents. Then, I will explain a proof that in fact this accounts for all possibilities. That is, for any orbit closure, a zero exponent can only arise due to some symmetry, and the number of zero exponents is precisely predicted by symmetries.

**John Smillie: The horocycle flow on eigenform loci**

According to Ratner, Margulis, Dani and others unipotent flows on homogeneous spaces have remarkable dynamical properties. A fundamental question in Teichmuller dynamics is the extent to which the horocycle flow on strata behaves like a unipotent flow on a homogeneous space. In joint work with Matt Bainbridge and Barak Weiss we investigate this question in the restricted setting of eigenform loci in genus 2. In particular we reprove and improve the result of Calta and Wortman on invariant measures and we describe orbit closures and equidistribution properties of orbits. We also describe equidistribution properties of natural sequences of measures. We will see that ideas that are important in Ratner theory are also important in this setting but that they develop interesting new wrinkles in the case of strata.

**Corinna Ulcigrai: Multiple mixing and Ratner property in area-preserving flows  
(based on joint work with Kanigowski and Kulaga)**

TBA

**Barak Weiss: Everything is illuminated (except possibly for finitely many points)**

TBA

**Alex Wright: The boundary of an affine invariant submanifold**

TBA