Monday, June 07, 2021
4:00pm-5:00pm  Midwest Dynamics and Group Actions -- Corinna Ulcigrai (University Zurich) *Rigidity of foliations on surfaces and renormalization* -- Virtual

Tuesday, June 08, 2021
12:00pm-2:00pm  Special Events -- Mitul Islam (UM) *Dissertation Defense: Rank One Phenomena in Convex Projective Geometry* -- Virtual

Thursday, June 10, 2021
10:00am-12:00pm  Special Events -- Angus Chung (UM) *Dissertation Defense: A factorization of the coefficients of exponential and logarithm series for function fields* -- Virtual
Midwest Dynamics and Group Actions  
Monday, June 07, 2021, 4:00pm-5:00pm  
Virtual  
Corinna Ulcigrai (University Zurich)  
*Rigidity of foliations on surfaces and renormalization*  

A class of dynamical systems is called (geometrically) rigid if the existence of a topological conjugacy implies automatically that the conjugacy is differentiable. Several classes of geometrically rigid system have been discovered in one-dimensional dynamics.  

In particular, it follows from a celebrated result by Michel Herman on circle diffeomorphisms (later improved by Yoccoz) that minimal smooth orientable foliations on surfaces of genus one, under a full measure arithmetic condition, are geometrically rigid.  

In very recent joint work with Selim Ghazouani, we prove a generalization of this result to genus two, in particular by showing that smooth, orientable foliations with non-degenerate (Morse) singularities on surfaces of genus two, under a full measure arithmetic condition, are geometrically rigid. This in particular proves the genus two case of a conjecture by Marmi, Moussa and Yoccoz (formulated in the language of the Poincare maps, namely generalized interval exchange transformations.  

During the talk, after motivating and explaining the result, we will give a brief survey of some of the key results in the theory of circle diffeos and in the study of generalized interval exchange maps and then an brief overview the strategy of the proof, which is based on renormalization.
Special Events
Tuesday, June 08, 2021, 12:00pm-2:00pm
Virtual
Mitul Islam (UM)
Dissertation Defense: Rank One Phenomena in Convex Projective Geometry

In this dissertation, we study the Hilbert geometry of properly convex domains from the perspective of non-positive curvature and geometric group theory. First, we introduce a notion of rank one properly convex domains and prove that rank one groups are either acylindrically hyperbolic or contain a finite index cyclic subgroup. This is in the spirit of rank one non-positively curved Riemannian manifolds. Second, we develop the notion of \( \mathcal{A} \)-\( \mathcal{A} \)-\( \mathcal{A} \)-properly convex domains with strongly isolated simplices\( \mathcal{A} \)-\( \mathcal{A} \)-\( \mathcal{A} \)- which is a finer notion than rank one. We prove that this notion completely characterizes the relative hyperbolicity of convex co-compact groups. This answers a question of Danciger-Gu\'eritaud-Kassel and provides a possible research direction for generalizing Anosov representation beyond Gromov hyperbolic groups. Lastly, we establish a convex projective analogue of the well-known Flat Torus Theorem from CAT(0) geometry.

Mitul's advisor is Ralf Spatzier.

Zoom: https://umich.zoom.us/j/97424051440
Passcode: defense

Special Events
Thursday, June 10, 2021, 10:00am-12:00pm
Virtual
Angus Chung (UM)
Dissertation Defense: A factorization of the coefficients of exponential and logarithm series for function fields

In number theory, explicit formulas for the special values of L-functions and p-adic L-functions are of great interest. For instance, the classical Leopoldt's formula expresses the value of the Kubota-Leopoldt p-adic L-function at \( s=1 \) in terms of logarithm of algebraic numbers called cyclotomic units. In this thesis, we extend this result to characteristic \( p \) v-adic L-functions for certain function fields, where \( v \) is a "finite place" of the function field. This extends the work of Anderson, who first showed a formula for L-functions and v-adic L-functions for \( F_\mathbb{Q}[t] \), as well as of Lutes, who extended Anderson's result for L-functions for any function field. Our result is achieved by factoring the coefficients of logarithm series in function fields, and hence showing the v-adic convergence of such series.