BGSU Department of Mathematics and Statistics

BOWLING GREEN STATE UNIVERSITY

Weekly Calendar – Fall Semester 2024
Week 7 – October 7 – October 11

Monday, October 7	**Fall Break** No Classes ☺
Tuesday, October 8	**Fall Break** No Classes ☺ **Geometry and Topology Seminar** 2:30pm – 3:30pm, zoom link TBA Speaker: Emily Stark, Wesleyan University Title: Conformal Dimension of Certain Bowditch Boundaries
Wednesday, October 9	**Peer Mentor Meetings** 3:30pm – 4:20pm, McLeod Hall 459, 400 & 340 **Undergraduate Committee** 4:30pm – 5:20pm, McLeod Hall 400
Thursday, October 10	**Peer Mentor Meeting** 4:00pm – 4:50pm, McLeod Hall 400
Friday, October 11	**Analysis Reading Seminar** 11:30am – 12:30pm, McLeod Hall 459 Speaker: Salma Hasannejad Title: Basic Facts about Hypercyclic Operators, Part 5 **Colloquium** 3:45pm – 5:00pm, McLeod Hall 459 Speaker: Behnam Esmayli, University of Cincinnati Title: Poincare Inequality and Quasiconformal Maps between Metric Spaces

ABSTRACTS

Geometry and Topology Seminar

Title: Conformal Dimension of Certain Bowditch Boundaries

Abstract: A relatively hyperbolic group pair admits a Bowditch boundary whose homeomorphism type carries algebraic information about the group. For certain relatively hyperbolic groups this boundary further admits a canonical quasi-symmetric structure and has a well-defined conformal dimension. We study a family of Coxeter groups that are hyperbolic relative to virtually abelian subgroups and fit in this framework. We give bounds on the conformal dimension for these groups. Our results imply there are infinitely many quasi-isometry classes within the family of Coxeter groups with defining graph a complete graph and edge labels equal to three. This is joint work with Elizabeth Field, Radhika Gupta, and Rylee Lyman.

Colloquium

Title: Poincare Inequality and Quasiconformal Maps between Metric Spaces

Abstract: One of the goals of geometric mapping theory is to establish strong regularity properties for maps between (metric) spaces that a priori satisfy seemingly mild metric properties. A remarkably successful story is the theory of quasi-conformal (QC) maps in Euclidean domains.

Beginning with pioneering work of Heinonen and Koskela in late 90's, a rich theory of QC maps between metric spaces has developed and found applications to many areas, such as analysis on metric spaces and geometric group theory.

On a more technical note, it was shown in 2007 that if a homemorphism between two metric spaces (with mild geometric assumptions) satisfies the metric condition of QC outside a set of co-dimension p, then it still enjoys the same regularity properties of QC maps, provided that the spaces satisfy a p-Poincare inequality. Poincare inequality is a strong connectivity condition on a metric measure space. It was open whether a weaker q-Poincare inequality might be sufficient.

After a friendly overview of QC maps, I will present the result of a recent work with P. Koskela and K. Nguyen that answers the question in the negative. Our example, a fractal subset of R^2, is very concrete and might be of independent interest.