Student Research Talks (StReeTs)

George Mason University

Half-spaces & Einstein's universe

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Abstract

The Teichmüller space of a surface can be viewed as a subset of the moduli space of representations of the surface's fundamental group into the group $PSL(2,\mathbb{R})$. The Space of maximal representation of the fundamental group of a surface generalize Teichmüller spaces by replacing the group $PSL(2,\mathbb{R})$ with another Lie group of Hermitian type such as $Sp(2n,\mathbb{R})$, $SU(p,q)$ or $SO(2,n)$.

In my master's thesis, we established a construction of hypersurfaces in the space of photons in Einstein's universe, a homogeneous space of $SO(2,n)$. The definition of these hypersurfaces simplifies the construction of disjoint half-spaces. These half-spaces, in turn, can be utilized to create fundamental domains for certain discrete subgroups of the indefinite orthogonal group $SO(2,n)$, including, among others, the images of maximal representations of surfaces with boundaries.

This presentation will primarily focus on the construction of these half-spaces. We will begin by examining the construction of (classical) Schottky Groups and its generalizations. We will cover the necessary material for the construction and ultimately demonstrate that the resulting half-spaces satisfy the key property required for building fundamental domains.

Date: Friday, November $10th$
Time: 2:30pm–3:20pm
Place: Exploratory Hall 4106

Pizza will be served at the presentation.

For further information or for special accommodations (including dietary restrictions), please contact Michael Merkle or Gabe Lumpkin via email at `mmerkle@gmu.edu or glumpkin@gmu.edu` by Thursday.