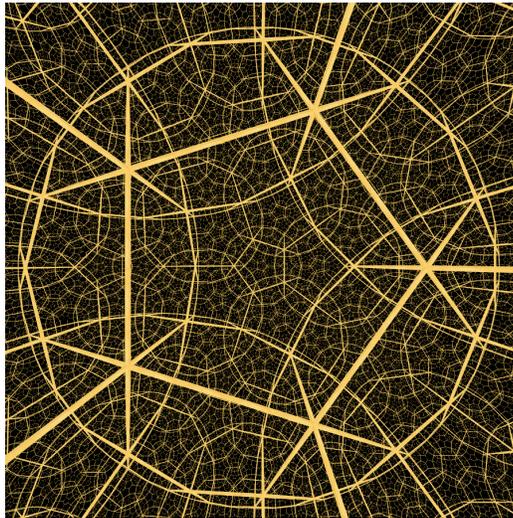


Arizona State University
MAT 598, Spring 2019
MW 3:05-4:20

Introduction to Geometric Structures



This class will provide an introduction to locally homogeneous geometric structures. Klein proposed in the celebrated Erlangen program that a *geometry* on a space X is provided by a transitive action of a Lie group G on X . Ehresmann and later Thurston studied manifolds M with geometric structures locally modelled on such a geometry (G, X) , or (G, X) -structures. Examples include classical metric and uniformizable structures, where M is given as a global quotient of X under the covering action of a discrete group of isometries acting on X , as well as more flexible and exotic structures. We will study some general properties of such structures, families of examples and relations between them such as transitions between different geometries on a fixed manifold.

Topics:

- Generalities on (G, X) -structures; holonomy and developing map
- Uniformizable metric structures
- Model spaces: constant curvature spaces, symmetric spaces
- Uniformization of surfaces
- Model geometries in dimension 3 and geometrization of 3-manifolds
- Convex projective structures
- Affine structures
- CR-spherical structures