

Sarah Koch: *Teichmüller Theory and endomorphisms of projective space*, \mathbb{P}^n
Abstract:

Let S^2 be a topological 2-sphere, and suppose that $f : S^2 \rightarrow S^2$ is a ramified covering map, such that all ramification points have finite orbits. William Thurston proved that every such map f is ‘equivalent’ to a rational map $F : \hat{C} \rightarrow \hat{C}$, or there is a topological obstruction. This theorem is known as Thurston’s characterization of rational maps.

We begin with combinatorial data of such a map $f : S^2 \rightarrow S^2$ and show how to construct a post-critically finite endomorphism $g : \mathbb{P}^n \rightarrow \mathbb{P}^n$ using some underlying Teichmüller theory. L. Bartholdi and V. Nekrashevych were the first to construct such an object in this setting. We generalize their construction and discuss the implications of this (for example, all of the endomorphisms g answer a question posed by C. McMullen in 1990). One can further interpret the dynamics of g in terms of Thurston’s characterization of rational maps.