

Recent Papers

Available upon request.

1. P. Bonfert-Taylor, R.D. Canary, G. Martin, E. Taylor, and M. Wolf, *Ambient Quasiconformal Homogeneity of Planar Domains*, to appear in *Ann. Acad. Sci. Fenn.*

We prove that the ambient quasiconformal homogeneity constant of a hyperbolic planar domain which is not simply connected is uniformly bounded away from 1.

We also consider a component Ω_0 of a finitely generated Kleinian group Γ . We show that if Ω_0/Γ is compact, then Ω_0 is uniformly ambiently quasiconformally homogeneous, and that if Ω_0 is not simply connected and its quotient Ω_0/Γ is non-compact, then it is not uniformly quasiconformally homogeneous.

2. P. Bonfert-Taylor, and E. Taylor, *Quasiconformally homogeneous planar domains*, *Conform. Geom. Dyn.* **12** (2008), 188–198.

In this paper we explore the ambient quasiconformal homogeneity of planar domains and their boundaries. We show that the quasiconformal homogeneity of a domain D and its boundary E implies that the pair (D, E) is in fact quasiconformally bi-homogeneous. We also give a geometric and topological characterization of the quasiconformal homogeneity of D or E under the assumption that E is a Cantor set captured by a quasicircle. A collection of examples is provided to demonstrate that certain assumptions are the weakest possible.

3. P. Bonfert-Taylor, G. Martin, A. Reid and E. Taylor, *Teichmüller mappings, quasiconformal homogeneity, and non-amenable covers of Riemann surfaces*, to appear in *Pure and Applied Mathematics Quarterly*.

We show that there exists a universal constant K_c so that every K -strongly quasiconformally homogeneous hyperbolic surface R (not equal to \mathbb{H}^2) has the property that $K > K_c > 1$. The constant K_c is the best possible, and is computed in terms of the diameter of the $(2, 3, 7)$ -hyperbolic orbifold (which is the hyperbolic orbifold of smallest area.) We further show that the minimum strong homogeneity constant of a hyperbolic surface without conformal automorphisms decreases if one passes to a non-amenable regular cover.

4. P. Bonfert-Taylor, K. Falk, and E. Taylor, *Gaps in the exponent spectrum of subgroups of discrete quasiconformal groups*, *Kodai Math. J.* **31** (1), 2008, 68–81.

Let G be a discrete quasiconformal group preserving \mathbb{B}^3 whose limit set $\Lambda(G)$ is purely conical and all of $\partial\mathbb{B}^3$. Let \hat{G} be a non-elementary normal subgroup of G : we show that there exists a set \mathcal{A} of full measure in $\Lambda(G)$ so that \mathcal{A} , regarded as a subset of $\Lambda(\hat{G})$, has “fat horospherical” dynamics relative to \hat{G} . As an application we will bound from below the exponent of convergence of \hat{G} in terms of the Hausdorff dimension of \mathcal{A} .

5. P. Bonfert-Taylor, M. Bridgeman, R.D. Canary and E. Taylor, *Quasiconformal homogeneity of hyperbolic surfaces with fixed-point full automorphisms*, *Math. Proc. Cambridge Philos. Soc.* **143** (1), 2007, 71–84.

We show that any closed hyperbolic surface admitting a conformal automorphism with “many” fixed points is uniformly quasiconformally homogeneous, with constant uniformly bounded away from 1. In particular, there is a uniform lower bound on the quasiconformal homogeneity constant for all hyperelliptic surfaces. In addition, we introduce more restrictive notions of quasiconformal homogeneity and bound the associated quasiconformal homogeneity constants uniformly away from 1 for all hyperbolic surfaces.

6. P. Bonfert-Taylor and G. Martin, *Quasiconformal groups with small dilatation II*, *Complex Var. Elliptic Equ.* **51** (2006), no. 2, 165–179.

We study discrete quasiconformal groups with small dilatation (that is dilatation close to 1) in n dimensions, $n \geq 3$. In particular, we show that under fairly general algebraic assumptions, a discrete quasiconformal group with small dilatation is isomorphic to a discrete group of Möbius transformations. We then analyze under what conditions the algebraic isomorphism is induced by a geometric homeomorphism between the limit sets.