

Recent Papers

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1. P. Bonfert-Taylor, G. Martin, A. Reid, and E.C. Taylor, *Teichmüller mappings, quasiconformal homogeneity, and non-amenable covers of Riemann surfaces*, submitted.

We show that there exists a universal constant K_c so that every K -strongly quasiconformally homogeneous hyperbolic surface X (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.

2. P. Bonfert-Taylor, K. Falk, and E. Taylor, *Gaps in the exponent spectrum of subgroups of discrete quasiconformal groups*, to appear in *Kodai Math. J.*

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} .

3. P. Bonfert-Taylor, M. Bridgeman, R.D. Canary and E. Taylor, *Quasiconformal homogeneity of hyperbolic surfaces with fixed-point full automorphisms*, *Math. Proc. Camb. Phil. Soc.* **143** (2007), 71–74.

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.

4. 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.

5. P. Bonfert-Taylor and E. Taylor, *Quasiconformal groups and a theorem of Bishop and Jones*, *J. Geom. Anal.* **15** (2005), no. 3, 373–389.

We provide new bounds on the exponent of convergence of a planar discrete quasiconformal group in terms of the associated dilatation and the Hausdorff dimension of its conical limit set. In doing so, we use these bounds to realize a theorem of C. Bishop and P. Jones as an asymptotic limit in the dilatation.

6. P. Bonfert-Taylor, R. Canary, G. Martin and E. Taylor, *Quasiconformal homogeneity of hyperbolic manifolds*, *Math. Ann.* **331** (2005), 281–295.

We show that if a hyperbolic manifold is uniformly quasiconformally homogeneous, then there are considerable constraints on its geometry. If $n \geq 3$, a hyperbolic n -manifold is uniformly quasiconformally homogeneous if and only if it is a regular cover of a closed hyperbolic orbifold. Moreover, if $n \geq 3$, we show that there is a constant $K_n > 1$ such that if M is a hyperbolic n -manifold, other than \mathbb{H}^n , which is K -quasiconformally homogeneous, then $K \geq K_n$.