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Convergence groups, Hausdorff dimension, and a Theorem of Sullivan and Tukia. (English)

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A K -quasiconformal group G acting on $\overline{\mathbb{R}^n} = \mathbb{R}^n \cup \{0\}$ is a discrete group of homeomorphisms, each of which is a K -quasiconformal mapping. A quasiconformal Fuchsian group (QCF) is a K -quasiconformal group preserving the upper-half space \mathbb{H}^n . By previous work of the second and third authors of the paper under review, there is a well-defined exponent of convergence $\delta(G)$ of the Poincaré series of a QCF G , generalizing the corresponding notion in the Kleinian group setting. In this paper, the authors prove the following

Theorem: Let G be a discrete quasiconformal Fuchsian group acting on $\overline{\mathbb{R}^n}$ and having nonempty regular set in $\overline{\mathbb{R}^{n-1}}$ and having a purely conical limit set. Then $\delta(G) < n - 1$.

Theorem: Let G be a discrete quasiconformal group acting on $\overline{\mathbb{R}^n}$ having non-empty regular set and a purely conical limit set. Then $\dim L(G) < n - 1$. The results partially generalize results of Sullivan and of Tukia which they proved in the case of geometrically finite Kleinian groups acting isometrically on \mathbb{H}^n . As an application, the authors obtain geometric information about infinite-index subgroups within certain of these groups. The paper contains other useful results and some open questions.

Reviewer: [Athanasios Papadopoulos \(Strasbourg\)](#)

MSC:

30C65 Quasiconformal mappings in \mathbb{R}^n , other generalizations

30F40 Kleinian groups (aspects of compact Riemann surfaces and uniformization)

20H10 Fuchsian groups and their generalizations (group-theoretic aspects)

Cited in **3** Documents

Keywords:

convergence groups; quasiconformal mappings; quasiconformal groups; Hausdorff dimension; Kleinian group; limit set

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