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The quadratic isoperimetric inequality for mapping tori of free group automorphisms. (English) [Zbl 1201.20037](#)

Mem. Am. Math. Soc. 955, xii, 152 p. (2010).

In this memoir the authors deal with the group $F \rtimes_{\varphi} \mathbb{Z}$, where φ is an automorphism of the free group F . This group is called the algebraic mapping torus.

They prove, in their Main Theorem, that if F is a finitely generated free group and φ an automorphism of F , then $F \rtimes_{\varphi} \mathbb{Z}$ satisfies a quadratic isoperimetric inequality.

One of the corollaries says that the conjugacy problem for $F \rtimes_{\varphi} \mathbb{Z}$ is solvable, a result proved before.

This memoir has three parts. In Part 1, they prove the special case where φ is a positive automorphism of F . Part 2 is dedicated to the construction and analysis of a refined topological representative for a suitable iterate of an arbitrary automorphism of a finitely generated free group. In Part 3 they use the techniques developed in Parts 1 and 2 to prove their Main Theorem.

Reviewer: [Stylianos Andreadakis \(Athens\)](#)

MSC:

- [20F65](#) Geometric group theory
- [20E36](#) Automorphisms of infinite groups
- [20E05](#) Free nonabelian groups
- [20F10](#) Word problems, other decision problems, connections with logic and automata (group-theoretic aspects)
- [57M07](#) Topological methods in group theory

Cited in **12** Documents

Keywords:

automorphisms of free groups; train tracks; isoperimetric inequalities; conjugacy problem

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