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Laminations, trees, and irreducible automorphisms of free groups. (English) Zbl 0884.57002
Geom. Funct. Anal. 7, No. 2, 215-244 (1997); erratum 7, No. 6, 1143 (1997).

Suppose H is a subgroup of $\text{Out}(F_n)$, the outer automorphism group of F_n , the free group of rank n , that contains an irreducible outer automorphism φ of infinite order. The authors show that either H contains F_2 or H is virtually cyclic. They demonstrate the word hyperbolicity of semidirect products $F_n \rtimes \mathbb{Z}$ induced by infinite order irreducible elements of $\text{Out}(F_n)$ and generalize this to certain semidirect products $F_n \rtimes F_2$. They also show that if A is a finitely generated subgroup of F_n of infinite index, then the action of A on T^+ is discrete, where T^+ is a φ -fixed real tree associated to φ .

Reviewer: [S.C.Althoen \(Flint\)](#)

MSC:

[57M07](#) Topological methods in group theory
[20F28](#) Automorphism groups of groups
[20E36](#) Automorphisms of infinite groups
[20E05](#) Free nonabelian groups

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