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Irreducible automorphisms of F_n have north-south dynamics on compactified outer space.

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Let F_n be the non-Abelian free group of rank n . In their study of the outer automorphism group $\text{Out}(F_n)$ of F_n , Culler and Vogtmann defined a moduli space CV_n of marked graphs, called ‘outer space’, which is finite dimensional, contractible and which has a spine which admits a discrete co-compact action with finite point stabilizers of $\text{Out}(F_n)$. *M. Bestvina* and *M. Handel*, in their study of the automorphisms of F_n , introduced in their paper [*Ann. Math. (2)* 135, No. 1, 1-51 (1992; [Zbl 0757.57004](#))] an analogue of Thurston’s pseudo-Anosov maps, and they called these maps “irreducible automorphisms” of F_n .

In the paper under review, the authors study the action of an irreducible automorphism on the closure $\overline{CV_n}$ of CV_n . They prove that if $\alpha \in \text{Aut}(F_n)$ is irreducible with irreducible powers, then its action on $\overline{CV_n}$ has north-south dynamics. In other words, there exist two points $[T^+]$ and $[T^-]$ in ∂CV_n such that $\alpha^p([T]) \rightarrow [T^+]$ as $p \rightarrow \infty$ for all $[T] \neq [T^-]$ and $\alpha^{-p}([T]) \rightarrow [T^-]$ as $p \rightarrow \infty$ for all $[T] \neq [T^+]$. This property is an analog of a property of the action of a pseudo-Anosov mapping class on Thurston’s compactification of Teichmüller space.

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

MSC:

[20F65](#) Geometric group theory
[20E05](#) Free nonabelian groups
[20E36](#) Automorphisms of infinite groups
[20E08](#) Groups acting on trees
[57M07](#) Topological methods in group theory

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free groups; outer spaces; outer automorphisms; irreducible automorphisms; pseudo-Anosov maps; train tracks

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