Normalizers of lone axis automorphisms

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In 1997, Bestvina-Feighn-Handel proved that if \phi is a fully irreducible outer automorphism then the normalizer of <\phi> in Out(F_n) is virtually cyclic. This theorem is a direct analogue of a theorem of McCarthy for pseudo-Anosov elements in the mapping class groups.

There exist examples of pseudo-Anosovs where:

(1) the normalizer is infinite cyclic,
(2) the normalizer is the infinite dihedral group (and some of its elements switch between the stable and unstable laminations of \phi)
(3) the normalizer and even the centralizer is neither infinite cyclic nor the infinite dihedral group but is isomorphic to some other cyclic-by-finite group. These examples can be transfered to Out(F_n).

In this talk we show for a class of examples in Out(F_n), namely ageoemetric lone axis fully irreducible outer automorphisms, that case (3) is impossible. This class was originally defined and studied by Mosher-Pfaff, who characterized its elements and show that they have particularly nice train-track representatives. We use these representatives to show that the centralizer of <\phi> in Out(F_n) is the infinite cyclic group.

This is a joint work with Catherine Pfaff.