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Rylee Alanza Lyman* (rylee.lyman@tufts.edu). *Detecting pseudo-Anosov orbifold braids in automorphisms of free products*. Preliminary report.

Zieschang in 1966 proved that the mapping class group of a punctured surface is isomorphic to the subgroup of outer automorphisms of its (free) fundamental group permuting the conjugacy classes corresponding to simple loops around the punctures. In 1992, Bestvina and Handel constructed *train track maps* on graphs representing *irreducible* elements of $\text{Out}(F_n)$, the outer automorphism group of a free group of rank n . Irreducible elements with irreducible powers are the $\text{Out}(F_n)$ analogue of pseudo-Anosov mapping classes, and Bestvina–Handel additionally show that if an irreducible outer automorphism preserves a nontrivial conjugacy class, then it may be represented as a pseudo-Anosov homeomorphism of a once-punctured surface. The author has recently extended the train track theory to automorphisms of free products. Here the analogy is to braid groups; we show that irreducible automorphisms of free products of finite subgroups of $SO(2)$ preserving a nonperipheral conjugacy class may be represented as pseudo-Anosov braid on a 2-orbifold. (Received January 19, 2020)