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An algorithm to decide if a free-by-cyclic group is a 3-manifold group. Preliminary report.

In 1992, Bestvina and Handel gave an algorithm to decide if an irreducible outer automorphism of a free group could be realized as a homeomorphism of a punctured surface. In turn, this allows one to recognize *some* 3-manifold groups. In recent joint work, Y. Qing, D. Wigglesworth, and I give an algorithm to decide, in general, whether an outer automorphism of a free group can be realized by a surface homeomorphism. As an application we obtain an algorithm to decide whether a given free-by-cyclic group is a 3-manifold group. (Received September 15, 2020)