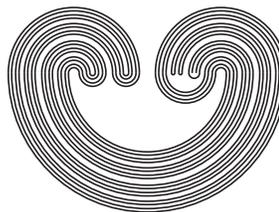


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by

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KIM RUANE

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CAT(0) EXTENSIONS OF RIGHT-ANGLED COXETER GROUPS

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AND KIM RUANE

ABSTRACT. We show that any split extension of a right-angled Coxeter group W_Γ by a generating automorphism of finite order acts faithfully and geometrically on a CAT(0) metric space.

1. INTRODUCTION

An isometric group action is *faithful* if its kernel is trivial, and it is *geometric* if it is cocompact and properly discontinuous. A finitely generated group G is a *CAT(0) group* if there exists a CAT(0) metric space X equipped with a faithful geometric G -action. The CAT(0) property is not an invariant of the quasi-isometry class of a group (see, for example, [1], [6], and [3, p. 258]). Whether or not it is an invariant of the abstract commensurability class of a group is as yet unknown. Attention was brought to this matter in [8]. In this article we illustrate that answering this question for any family of CAT(0) groups may require a variety of techniques.

It is well known that an arbitrary right-angled Coxeter group W is a CAT(0) group because it acts faithfully and geometrically on a CAT(0) cube complex X . It is also well known that the automorphism group $\text{Aut}(W)$ is generated by three types of finite-order automorphisms. As a natural source of examples we consider split extensions of right-angled Coxeter groups by finite cyclic groups, where, in each case, the cyclic

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