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Corrigendum: A certain structure of Artin groups and the isomorphism conjecture

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Abstract. In this note, we give an alternate proof of the Farrell–Jones isomorphism conjecture for the affine Artin groups of type $\widetilde{B}_n$.

In [4], Flechsig pointed out an error in [6, Proposition 4.1], which was needed to deduce the Farrell–Jones isomorphism conjecture for the affine Artin groups $\mathcal{A}_{\widetilde{B}_n}$ $(n \geq 3)$ of type $\widetilde{B}_n$.

In this note, we give an alternate argument to prove the conjecture.

Theorem 0.1 *The Farrell–Jones isomorphism conjecture wreath product with finite groups (FICwF) is true for $\mathcal{A}_{\widetilde{B}_n}$ $(n \geq 3)$.*

Proof Consider the following hyperplane arrangement complement.

$$W = \{w \in \mathbb{C}^n \mid w_i \neq \pm w_j, \text{ for all } i \neq j; w_k \neq \pm 1, \text{ for all } k\}.$$

In [2, Section 3], the following homeomorphism was observed. Let $\mathbb{C}^* = \mathbb{C} - \{0\}$.

$$\mathbb{C}^* \times W \simeq X := \{x \in \mathbb{C}^{n+1} \mid x_i \neq \pm x_j, \text{ for all } i \neq j; x_1 \neq 0\}.$$
$$(\lambda, w_1, w_2, \ldots, w_n) \mapsto (\lambda, \lambda w_1, \ldots, \lambda w_n).$$

In [2, Lemma 3.1], it was then proved that the hyperplane arrangement complement X is simplicial, in the sense of [3].

From [5], it follows that $FICwF$ is true for $\pi_1(X)$, since X is a finite real simplicial arrangement complement. Hence, $FICwF$ is true for $\pi_1(W)$, as $\pi_1(W)$ is a subgroup of $\pi_1(X)$ and $FICwF$ has hereditary property (see [6]).

Next, note that there are the following two finite sheeted orbifold covering maps:

$$W \to PB_n(Z) := \{z \in Z^n \mid z_i \neq z_j, \text{ for all } i \neq j\}$$
$$(w_1, w_2, \ldots, w_n) \mapsto (w_1^2, w_2^2, \ldots, w_n^2)$$

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and $PB_n(Z) \to B_n(Z) := PB_n(Z)/S_n$. Here, $Z = \mathbb{C}(1,1;2)$ (see [6]) is the orbifold whose underlying space is $\mathbb{C} - \{1\}$, and 0 is an order 2 cone point. And, the symmetric group S_n is acting on $PB_n(Z)$ by permuting coordinates.

Therefore, $\pi_1(W)$ embeds in $\pi_1^{orb}(B_n(Z))$ as a finite index subgroup. Hence, $FICwF$ is true for $\pi_1^{orb}(B_n(Z))$, since $FICwF$ passes to finite index overgroups (see [6]). Next, recall that in [1] Allcock showed that $\mathcal{A}_{\widetilde{B}_n}$ is isomorphic to a subgroup of $\pi_1^{orb}(B_n(Z))$, and hence $FICwF$ is true for $\mathcal{A}_{\widetilde{B}_n}$ by the hereditary property of $FICwF$. ■

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