ALEXANDER INVARIANTS OF COMPLEX HYPERPLANE ARRANGEMENTS

DANIEL C. COHEN AND ALEXANDER I. Suciu

Abstract. Let $\mathcal{A}$ be an arrangement of $n$ complex hyperplanes. The fundamental group of the complement of $\mathcal{A}$ is determined by a braid monodromy homomorphism, $\alpha : F_n \to F_n$. Using the Gassner representation of the pure braid group, we find an explicit presentation for the Alexander invariant of $\mathcal{A}$. From this presentation, we obtain combinatorial lower bounds for the ranks of the Chen groups of $\mathcal{A}$. We also provide a combinatorial criterion for when these lower bounds are attained.

Department of Mathematics, Louisiana State University, Baton Rouge, LA 70803

E-mail address: cohen@math.lsu.edu
URL: http://math.lsu.edu/~cohen

Department of Mathematics, Northeastern University, Boston, MA 02115

E-mail address: alexsuciu@neu.edu
URL: http://www.math.neu.edu/~suciu