

1142-20-97

Robert W Bell* (rbell@math.msu.edu) and **Rita Gitik** (ritagtk@umich.edu).

Quasi-positivity and recognition of products of conjugacy classes in free groups.

We formulate an algorithm for recognizing whether a given word in a free group $F(X)$ is equal to a product of conjugates of positive powers of basis elements. Such a word is called quasi-positive. The study of quasi-positivity in braid groups has important connections to contact topology and knot theory. Our investigation is motivated by this problem. The algorithm we construct is based on a theorem of Gersten that gives a topological characterization of when, for a given finite sequence (w_1, \dots, w_k) of words in $F(X)$, there exist elements $c_1, \dots, c_k \in F(X)$ such that $w_1^{c_1} \cdots w_k^{c_k} = 1$. (Received August 30, 2018)