

1067-20-698

Christopher H. Cashen* (cashen@math.utah.edu), University of Utah, Department of Mathematics, 155 S 1400 E RM 233, Salt Lake City, UT 84112. *Line Patterns in Free Groups*.

Let w be a non-trivial word in a finite rank free group F . The w -line through $g \in F$ is the coarse equivalence class of the set $\{gw^m\}_{m \in \mathbb{Z}}$. The line pattern generated by w is the collection of distinct w -lines.

There is topological space, the quotient of the boundary at infinity of F obtained by identifying the two endpoints of a line in the pattern, that encodes the large scale geometry of the line pattern. A quasi-isometry of F that coarsely preserves the line pattern gives a homeomorphism of this topological space, and by studying the finite cut set structure we obtain rigidity results for pattern preserving quasi-isometries and a JSJ-decomposition for F relative to the line pattern.

Applications include quasi-isometry classifications for some classes of graphs of free groups and a characterization of virtually geometric multiwords. (Received September 13, 2010)