Inductive braid relationships

- Same relationships hold for braids:

  - Splitting: $rk(xy) \leq rk(x) + rk(y)$ for $x, y \in B_n$,

  - Conjugacy: $rk(\alpha x \alpha^{-1}) = rk(x)$

- Find additional subwords we can improve.

Detecting Conjugates

- Detect conjugates by comparing words.

Word Problem Algorithms:

- Lawrence-Krammer matrix representation. $O(ln^6)$

- Artin's action on free group. $O(3^l n)$

- Dehornoy handle reduction