

Relations by Bellingeri

March-04-15 2:39 PM

From

<http://arxiv.org/abs/math/0110129v2>

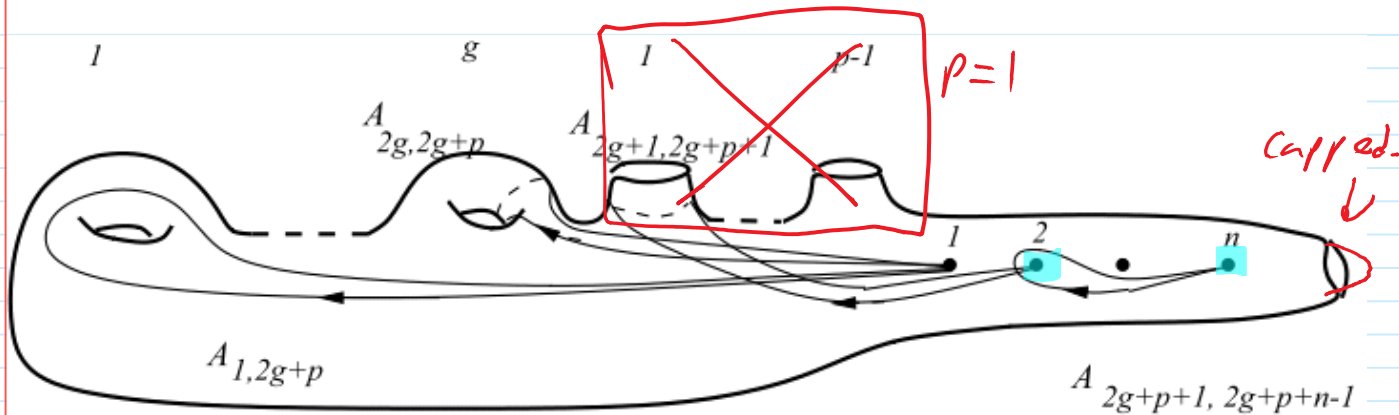


FIGURE 11. **Geometric interpretation of $A_{i,j}$.** We mark again with $A_{i,j}$ the only non trivial string of the braid $A_{i,j}$

strand index

Theorem 6.2. Let F be an orientable closed surface of genus $g \geq 1$. $P(n, F)$ admits the following presentation:

- Generators: $\{A_{i,j} \mid 1 \leq i \leq 2g + n - 1, 2g + 1 \leq j \leq 2g + n, i < j\}$. ✓
- Relations:

(PR1) $A_{i,j}^{-1} A_{r,s} A_{i,j} = A_{r,s}$ if $(i < j < r < s)$ or $(r + 1 < i < j < s)$,
or $(i = r + 1 < j < s)$ for even $r < 2g$ and $r > 2g$; ✓

(PR2) $A_{i,j}^{-1} A_{j,s} A_{i,j} = A_{i,s} A_{j,s} A_{i,s}^{-1}$ if $(i < j < s)$;

(PR3) $A_{i,j}^{-1} A_{i,s} A_{i,j} = A_{i,s} A_{j,s} A_{i,s} A_{j,s}^{-1} A_{i,s}^{-1}$ if $(i < j < s)$;

(PR4) $A_{i,j}^{-1} A_{r,s} A_{i,j} = A_{i,s} A_{j,s} A_{i,s}^{-1} A_{j,s}^{-1} A_{r,s} A_{j,s} A_{i,s} A_{j,s}^{-1} A_{i,s}^{-1}$
if $(i + 1 < r < j < s)$ or
 $(i + 1 = r < j < s)$ for odd $r < 2g$ and $r > 2g$;

(ER1) $A_{r+1,j}^{-1} A_{r,s} A_{r+1,j} = A_{r,s} A_{r+1,s} A_{j,s} A_{r+1,s}^{-1}$
if r even and $r < 2g$;

(ER2) $A_{r-1,j}^{-1} A_{r,s} A_{r-1,j} = A_{r-1,s} A_{j,s} A_{r-1,s}^{-1} A_{r,s} A_{j,s} A_{r-1,s} A_{j,s}^{-1} A_{r-1,s}^{-1}$
if r odd and $r < 2g$;

(TR) $[A_{2g,2g+k}^{-1}, A_{2g-1,2g+k}] \cdots [A_{2,2g+k}^{-1}, A_{1,2g+k}] = \prod_{l=2g+1}^{2g+k-1} A_{l,2g+k} \times$
 $\times \prod_{j=2g+k+1}^{2g+n} A_{2g+k,j} \quad k = 1, \dots, n.$