1 Relations for the Reflection Quotient

Represent the $(3,n)$-Torus knot as the closure of the braid word $(\sigma_1\sigma_2)^n$. Consider the generating set $S = \{a,b,c\}$ where a,b,c are as in Figure 1.

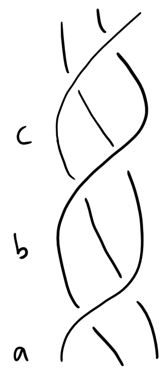

Figure 1: The generators of the reflection quotient

Proposition 1.1. *The generating relations for a $(3,n)$-Torus link are*

$T(3,3k)$	$T(3,3k+1)$	$T(3,3k+2)$
$(cba)^{k-1}cbabc(abc)^{k-1}a$	$(cba)^{k-1}cbababc(abc)^{k-1}a$	$(cba)^k c(abc)^k a$
$(cba)^{k-1}cbc(abc)^{k-1}aba$	$(cba)^k bcb(abc)^k aba$	$(cba)^k bab(abc)^k aba$

Proof. Use the twist relations from Figure 2. □

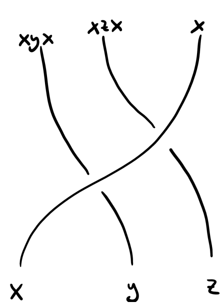

Figure 2: The relations induced by a twist

Example 1.2. For the $(3,4)$-Torus knot, the above relations are *cbababca* and *cbabcbabcaba*, so $|ab| = |bc| = 3$ and $|ac| = 2$ yields a Coxeter quotient.

Conjecture 1.3. *The $(n,n+1)$-Torus Knot has a Coxeter quotient isomorphic to S_n. More generally, so does the $(n,m(n+1))$-Torus Knot for all $m \geq 1$.*