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title: On the growth of torus knot groups

abstract: Let p and q be integers satisfying $2 \leq p \leq q$. Let $G(p, q)$ be the group $G(p, q) = \langle x, y \mid x^p = y^q \rangle$. If p and q are coprime, then $G(p, q)$ is realized as the fundamental group of the complement of the (p, q) -torus knot in the 3-dimensional sphere.

In this talk, I present a rational function expression for the growth series of $G(p, q)$ with respect to the generating set $\{x, y\}$. Moreover, I show that if $(p, q) \neq (2, 2), (2, 3)$, then the growth rate of $G(p, q)$ is a Perron number, by using Komori-Umemoto's lemma. Here, a real algebraic integer $\tau > 1$ is called a Perron number, if any algebraic conjugates other than τ itself have smaller absolute values than τ .