

Research program

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The following researches are projected.

The $\Gamma_{p/q}$ -polynomial and the $V_{p/q}$ -polynomial

I will study the problem “Which is strong, the $\Gamma_{p/q}$ -polynomial or the $V_{p/q}$ -polynomial?”

The $\Gamma_{p/q}$ -polynomial for sufficiently large p

Considering the $\Gamma_{p/q}$ -polynomial for sufficiently large p , I will study whether we can obtain geometric information of knots like the volume conjecture.

Kawauchi’s conjecture

Let K, K' be knots. If $\Gamma_{p/q}(K) = \Gamma_{p/q}(K')$ for any coprime integers $p(> 0)$ and q , then $P(K) = P(K')$ and $F(K) = F(K')$.

On knots with the trivial $\Gamma_{2/1}$ -polynomial

We have already shown that there exist infinitely many knots with the trivial $\Gamma_{2/1}$ -polynomial and the knots have the trivial Γ -polynomial and the trivial first coefficient HOMFLYPT and Kauffman polynomials. I consider whether any knot with the trivial $\Gamma_{2/1}$ -polynomial has the trivial Γ -polynomial and the trivial first coefficient HOMFLYPT and Kauffman polynomials.

Characterization of the Γ -polynomials of knots by using knots with clasp number at most two

It is known that the Γ -polynomials of knots are characterized by using 2-bridge knots with unknotting number one. I consider whether the Γ -polynomials of knots can be characterized by using knots with clasp number at most two.

Clasp-pass moves of type X and the Γ -polynomial for knots

It is known that the Γ -polynomial is invariant under clasp-pass moves of type X . I consider whether knots K, K' with $\Gamma(K) = \Gamma(K')$ are related by clasp-pass moves of type X .

Minimal grid diagrams and minimal closed braid diagrams

(Joint work with Hwa Jeong Lee)

Every knot has minimal grid diagrams. We consider whether there always exists a minimal grid diagram which presents a minimal closed braid diagram.

4-move for cable knots

(Joint work with Hwa Jeong Lee)

Our purpose is to deform the $(2, 1)$ -cable knots of knots up to ten crossings into the unknot by 4-moves.