Research program

Hideo Takioka

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.