

Plan of Research

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We proved that for any link in the n -bridge position of the 3-sphere, we obtain a genus n Heegaard splitting for the 0-surgery manifold along the link from the 3-sphere. Therefore, the bridge genus and the braid genus are the minimal number of the genus of a splitting for the 3-manifold obtained by adding a restriction to the Heegaard surface homeomorphism. we consider this restriction and we represent the restricted Heegaard surface homeomorphism of the 3-manifold obtained by the 0-surgery along a link by using the Suzuki generators of the mapping class group of a closed surface. Firstly, I have to write a paper about these results.

It is well known that every closed connected orientable 3-manifold is obtained by the 0-surgery of S^3 along a link. Thus, we can represent any closed connected orientable 3-manifold by a link. A. Kawauchi and I. Tayama are making a table of closed connected orientable 3-manifolds by using an order relation for links. In general, for any closed connected orientable 3-manifold M , there exist infinitely many links whose 0-surgery manifold is M . Hence we need remove these links from the table. Therefore we need judge two closed connected orientable 3-manifolds obtained by 0- surgery along two links are same or not. A. Kawauchi and I. Tayama do it by calculating an invariant of the 3-manifold. I would like to judge two closed connected orientable 3-manifolds obtained by two links are same or not by comparing to two links. Moreover, I try to construct new invariant of a 3-manifold by a invariant for these links. Thus we need more examples of two closed connected orientable 3-manifolds obtained by 0- surgery along two links are same. First, I try to construct many examples of a link whose 0-surgery manifold is the 3-sphere.

I interest in the handlebody knot theory. I have studied about the Heegaard splitting and the mapping class group of the handlebody. I think that the Suzuki generator of the mapping class group of the handlebody compatible with the Reidemeister move of the handlebody knot. From the viewpoint of these, I would like to construct new invariant of the handlebody knot.