

Meeting: 1039, Claremont, California, SS 7A, Special Session on Knot Theory and the Topology of 3-manifolds

Ozawa Makoto* (w3c@komazawa-u.ac.jp), Komazawa 1-23-1, Setagaya-ku, Tokyo. *Rational structure on algebraic tangles and closed incompressible surfaces in the complements of algebraically alternating knots and links.* Preliminary report.

Let F be an incompressible, meridionally incompressible and not boundary-parallel surface in the complement of an algebraic tangle T . Then F separates the strings of T and the boundary slope of F is uniquely determined by T and hence we can define the slope of the algebraic tangle. In addition to the Conway's tangle sum, we define a natural product of two tangles. The slopes and binary operation on algebraic tangles lead an algebraic structure which is isomorphic to the rational numbers.

We introduce a new knot and link class, algebraically alternating knots and links, roughly speaking which are constructed from alternating knots and links by replacing some crossings with algebraic tangles. Let F be a closed incompressible and meridionally incompressible surface in the complement of an algebraically alternating knot or link K . Then F separates the components of K , in particular if K is a knot, then the complement of K does not contain such a surface. (Received February 19, 2008)