**Miyazawa, Yasuyuki**

**Links with trivial $Q$-polynomial.** (English) Zbl 1422.57025

J. Math. Soc. Japan 71, No. 1, 19-42 (2019).

In [*S. Eliahou* et al., Topology 42, No. 1, 155–169 (2003; Zbl 1013.57005)], infinite families of links with trivial Jones polynomials were constructed. Here a polynomial invariant for a $\mu$-component link is trivial if the polynomial is identical with that of the trivial $\mu$-component link. However, the problem of existence of a nontrivial knot with trivial Jones polynomial is still open.

In this paper the author constructs families of infinitely many prime knots and links with trivial $Q$-polynomial. He observes that among prime knots with up to 16 crossings there are exactly two knots that have trivial $Q$-polynomial ($16_{n389841}$ and $16_{n491778}$). The main theorem states that for each positive integer $\mu$, there exist infinitely many mutually distinct prime $\mu$-component links with trivial Conway and $Q$-polynomials. The author uses the HOMFLY polynomial to show that these links are distinct and non trivial.

To establish that the links are prime the author decomposes the links into prime tangles and then uses the theorem stating that a link obtained from the tangle sum of two prime tangles is prime, see [*W. B. R. Lickorish*, Trans. Am. Math. Soc. 267, 321–333 (1981; Zbl 0472.57004)] or [*Y. Nakanishi*, Math. Semin. Notes, Kobe Univ. 9, 415–440 (1981; Zbl 0491.57003)].

Reviewer: Claus Ernst (Bowling Green)

**MSC:**

57M25 Knots and links in the 3-sphere (MSC2010)
57M27 Invariants of knots and 3-manifolds (MSC2010)

**Keywords:**

$Q$-polynomial; trivial polynomial; Jones polynomial; HOMFLY polynomial; Kauffman polynomial; Alexander polynomial; Conway polynomial

**Full Text:** DOI Euclid