Integrality of Seifert surgery coefficient of twist knot, and Reidemeister torsion
(joint work with Tsuyoshi Sakai (Nihon University))

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Abstract. M. Brittenham and Y. Wu determined exceptional surgeries along every 2-bridge knot by using a lamination structure of the knot complement. In particular, a 2-bridge knot producing Seifert fibered spaces is a twist knot, which is denoted by $C(2n, 2)$ ($n \in \mathbb{Z}$) in Conway's notation up to mirror images, and its Seifert surgery coefficients are 1, 2 and 3 (and more for $n = 0, \pm 1$). The speaker proved that the Alexander polynomial of a twist knot for $n \neq 0, -1$ restricts the positive numerators of Seifert surgery coefficients into 1, 2 or 3. We try to prove that the denominators of Seifert surgery coefficients are ± 1 (i.e. integrality) by using the Alexander polynomial of the knot and an invariant deduced from the Reidemeister torsion of the branched covering over the knot. We obtained necessary conditions as Diophantine equations, and partial answers for some cases.