

Seifert surgery along a knot whose Alexander polynomial is of degree two

TERUHISA KADOKAMI

Let K be a knot in an integral homology 3-sphere Σ , $\Delta_K(t)$ the Alexander polynomial of K , and $\Sigma(K; p/q)$ a p/q -surgery along K . We assume that $\Delta_K(t) = n(t-1)^2 + t$ where n is an integer such that $n \neq 0, 1$, and $p \geq 2$. Then we have the following:

Theorem 1 *If $\Sigma(K; p/q)$ is a Seifert fibered space over S^2 , then p is not divisible by 4, 6 and 9.*

By using Theorem 1, we obtain strict results for the cases $n = -1$ and -2 .

Theorem 2 *If $\Sigma(K; p/q)$ is a Seifert fibered space over S^2 , and $\Delta_K(t) = t^2 - 3t + 1$ or $2t^2 - 5t + 2$, then $p = 2$ or 3.*

It is well-known that if K is the figure eight knot, then $\Delta_K(t) = t^2 - 3t + 1$, and if K is the $(-3, 3, 2m+1)$ -pretzel knot (m is an integer), then $\Delta_K(t) = 2t^2 - 5t + 2$.

OSAKA CITY UNIVERSITY