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RELATIONSHIP BETWEEN THE KAUFFMAN BRACKET POLYNOMIALS OF TORUS KNOTS: $(T_{3,3n+1})$ AND $(T_{3,3n+2})$

A.A.A.W.N. Dissanayake* **and S.V.A. Almeida**

Department of Mathematics, Faculty of Science, University of Kelaniya, Kelaniya, Sri Lanka.
**wayani6586V@gmail.com*

Knot theory is a branch of topology that studies mathematical knots. New knot invariants were the foundation for the work of many mathematicians. A knot invariant is a property α for a knot K, where α is the same for any projection of K. A knot polynomial is one such knot invariant. Knot polynomials are polynomials that are assigned to knot projections based on the mathematical properties of the knots. This study is restricted to polynomials of torus knots, knots that lie on an unknotted torus, without crossing over or under themselves as they lie on the torus. Every torus knot is a (p, q)-torus knot, where p and q are two relatively prime integers that are represented by the symbol $T_{p,q}$. Most of the research done on this particular area of Knot Theory, has focused on finding polynomial representations such as Kauffman Bracket polynomial, the Bracket polynomial for the $(2, q)$-torus knot and polynomial representations such as Alexander polynomial, Conway polynomial and Jones polynomial for the (p, q)-torus knot. With the exception of the complete solution to the Alexander, Conway, and Jones polynomials of $T_{p,q}$, the problem of determining the polynomial for $T_{2,q}$ is almost solved. The study is an attempt to solve the computation problem for the Kaufmann Bracket Polynomial of $T_{p,q}$. The work will provide a relationship between Kauffman Bracket polynomials of the torus knots' $(T_{3,3n+2})$ and $(T_{3,3n+1})$ for $n \in N$.

Keywords: Knot invariants, Knot polynomials, Skein relations, Torus knots