

# Kauffman'S Bracket on Rational Tangles and Rational Knots

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## ABSTRACT

Computing Jones polynomial for a knot or link through Kauffman's bracket grows exponentially with the number of crossings in the diagram. In this paper we introduce a method for computing Kauffman's bracket for rational knots that reduces the number of terms to a very low number. Our main result is proved after introducing a new algebraic construction on the module consisting of the values of the bracket polynomial on rational tangles. In fact we define a multiplication operation on this module that makes it an associative commutative algebra over a ring. This algebraic structure with its compatibility with the operations on rational tangles is exactly what makes it possible to simplify the computing process.