Tutte Polynomials of Signed Graphs
and Jones Polynomials of Some Large Knots

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Abstract

It is well-known that the Jones polynomial of a knot is closely related to the Tutte polynomial of a special graph obtained from a regular projection of the knot. In this paper, we study the Tutte polynomials for signed graphs. We show that if a signed graph is constructed from a simpler graph via $k$-thickening or $k$-stretching, then its Tutte polynomial can be expressed in terms of the Tutte polynomial of the original graph, thus enabling us to compute the Jones polynomials for some (special) large non-alternating knots.