

A Unified Model of All Generalizations from the Jones Polynomial

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(Received: 2000-2-24; Revised:)

Abstract: From the basic properties of skein systems, we build a generalized tangle algebra (GTA). The elements of GTA are four basic tangles. There are three operations, which are connection, splicing and scalar multiplication. From GTA we derive two generalized recursion formulae (GRF) and prove the existence of a generalized skein relation which satisfies GRF. The obtained generalized skein relation epitomizes all generalizations from the Jones polynomial and thus forms a unified model. Two important topological parameters, twisting measure and loop values, appear explicitly in the expressions of the unified model, and this fact greatly simplifies the operations.

PACS: 02.40.+m

Key words: Jones polynomial, skein relation, tangle algebra, recursion formula

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