Dunaykin, Alexander; Zhukov, Vyacheslav
Transition polynomial as a weight system for binary delta-matroids. (English) Zbl 07551760

Summary: To a singular knot $K$ with $n$ double points, one can associate a chord diagram with $n$ chords. A chord diagram can also be understood as a 4-regular graph endowed with an oriented Euler circuit. L. Traldi introduced a polynomial invariant for such graphs, called a transition polynomial. We specialize this polynomial to a multiplicative weight system, that is, a function on chord diagrams satisfying 4-term relations and determining thus a finite type knot invariant. We prove a similar statement for the transition polynomial of general ribbon graphs and binary delta-matroids defined by R. Brijder and H. J. Hoogeboom, which defines, as a consequence, a finite type invariant of links.

MSC:
05C31 Graph polynomials
05B35 Combinatorial aspects of matroids and geometric lattices
52B40 Matroids in convex geometry (realizations in the context of convex polytopes, convexity in combinatorial structures, etc.)

Keywords:
knot; link; finite type invariant of knots; chord diagram; transition polynomial; delta-matroid

Full Text: Link

References:

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.