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io-port 05232033 Creel, Conrad; Nelson, Sam Symbolic computation with finite biquandles. J. Symb. Comput. 42, No. 10, 992-1000 (2007).

A biquandle is a nonassociative algebraic structure whose axioms follow from the desire to assign biquandle elements to the semi-arcs of virtual link diagrams in a way that makes the number of such assignments (colorings) an invariant under generalized Reidemeister moves. The number of colorings is the simplest invariant that can be obtained from a given biquandle. The more sophisticated invariants are obtained from certain functions that assign a weight to each crossing in the colored link diagram. These functions are elements of the second Yang-Baxter cohomology of the biquandle used in the coloring as defined in J. S. Carter, M. Elhamdadi and M. Saito [Fundam. Math. 184, 31–54 (2004; Zbl 1067.57006)]. In this paper, the authors describe a method of computing a basis for the second Yang-Baxter cohomology of a finite biquandle with coefficients in \mathbb{Q} and \mathbb{Z}_p from a matrix presentation of the finite biquandle. They also give a method for computing the Yang-Baxter cocycle invariants of an oriented knot or link represented as a signed Gauss code (a URL for Maple implementations of these algorithms is provided). Maciej Niebrzydowski (Lafayette)

Keywords: Yang-Baxter cohomology; knot invariants; virtual knot invariants; finite biquandles; symbolic computation

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