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Periodic virtual and welded knots and automorphisms of classical knot groups

Symmetries of classical knots were introduced over 50 years ago by R. Fox, and of special interest are free periods and cyclic periods of a knot. In either case, a symmetric representative of the knot type induces a welded-defined outer automorphism of the knot group. In this talk, I will report on recent joint work with Andy Nicas on the question of whether a classical knot can admit periodic virtual or welded diagrams that are somehow new or different from any of its classical periods. This question is open to interpretation, but one way is to compare the induced automorphisms. We provide an answer, and our proof combines old results of Schreier (for torus knots) and Zimmermann (for non-torus knots).