

1142-57-174

Micah Chrisman* (chrisman.76@osu.edu). *Virtual Alexander invariants and virtual Seifert surfaces.*

Alexander polynomials and generalized Alexander polynomials of virtual knots can be computed via Alexander biquandles (Crans-Henrich-Nelson) or the extended knot group (Silver-Williams). Here we consider the case of almost classical (AC) knots. These are virtual knots that can be represented by homologically trivial knots in thickened surfaces $\Sigma \times [0, 1]$, where Σ is a closed orientable surface. Such knots bound Seifert surfaces $F \subset \Sigma \times [0, 1]$. Alexander polynomials of AC knots can be computed from Seifert surfaces in a similar (but not identical) fashion to the classical case (Boden-Gaudreau-Harper-Nicas-White). However, these Seifert surfaces are difficult to draw in practice. We present a generalization of Seifert's algorithm to homologically trivial knots in thickened surfaces. These virtual Seifert surfaces are constructed from Gauss diagrams. In addition to computing Alexander invariants, we show how to use virtual Seifert surfaces to estimate various geometric invariants of knots in thickened surfaces, such as the virtual slice genus and the virtual 3-genus. (Received September 02, 2018)