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Hans U Boden* (boden@mcmaster.ca), **Micah Chrisman** and **Robin Gaudreau**.

Concordance invariants of virtual knots.

Virtual knot theory concerns knots in thickened surfaces, and Turaev introduced virtual concordance and several useful invariants of them. This talk is based on joint work in progress with Micah Chrisman and Robin Gaudreau, and our goal is to extend various classical concordance invariants to the virtual setting and apply them to determine the sliceness and the 4-genus for low crossing virtual knots. One of the obstacles in virtual knot theory is the absence of Seifert surfaces, and for that reason we focus on the subclass of virtual knots with homologically trivial representatives. These knots admit Seifert surfaces, and we use them to define the usual package of knot invariants, including Alexander-Conway polynomials, signatures, and twisted signatures. In general, the resulting invariants depend on the choice of Seifert surface, and they often (but not always) give rise to concordance invariants of long virtual knots. The untwisted signatures can be computed in terms of Goeritz matrices a la Gordon-Litherland, and using Manturov projection, signature invariants can be extended from the homologically trivial knots to all virtual knots. We apply these and other invariants to determine sliceness for virtual knots with up to 6 crossings. (Received July 17, 2017)