

1041-57-50

Yuanan Diao* (ydiao@unc.edu), Department of Mathematics and Statistics, University of North Carolina Charlotte, 9201 University City Blvd, Charlotte, NC 28223, and **Gabor Hetyei**.

Relative Tutte Polynomials for Colored Graphs and Virtual Knot Theory. Preliminary report.

We introduce the concept of a relative Tutte polynomial. We show that the relative Tutte polynomial can be computed in a way similar to the classical spanning tree expansion used by Tutte in his original paper on this subject. We then apply the relative Tutte polynomial to virtual knot theory. More specifically, we show that the Kauffman bracket polynomial (hence the Jones polynomial) of a virtual knot can be computed from the relative Tutte polynomial of its face graph with some suitable variable substitutions. Our approach is different from the ribbon graph approach and it applies to any virtual link diagram, not just the checkerboard colorable ones. (Received July 28, 2008)