1142-57-50   **Elizabeth Denne***, Washington & Lee University, Robinson Hall, Lexington, VA 24450, and **Corinne Joireman** and **Allison Young**. *The mathematics of tie knots.* Preliminary report.

In 2000, T. Fink and Y. Mao wrote a paper which developed a mathematical model of tie knots. They provided a map between tie knots and certain random walks on a triangular lattice. With added aesthetic constraints, they found 85 tie knots that can be tied with a conventional tie. After joining the two ends of the tie knot together, we viewed the tie knots as mathematical knots. In this talk we will discuss our many discoveries about these knots. For example, we found the knot types of all 85 ties, and we proved that all tie knots are alternating knots. (Received August 23, 2018)