1172-54-13   **Amy Eubanks**, **Mark Hughes*** (`hughes@mathematics.byu.edu`) and **Jared Slone**. *Using generative adversarial networks to produce knots with specified invariants.*

Knots in 3-dimensional space form an infinite dataset whose structure is not yet well-understood. Recently techniques from machine learning have been applied to knots in an effort to better understand their topology, however so far these approaches have mainly involved techniques from supervised and reinforcement learning. In this talk I will outline an approach to using combinations of transformers and generative adversarial networks (GAN) to produce knots with specified invariant values. In particular, we show how to construct a GAN which takes as input a given Jones polynomial, and outputs a knot with that Jones polynomial. We demonstrate how such a GAN can be used to produce potential counterexamples to open conjectures. This is joint work with Amy Eubanks and Jared Slone. (Received July 25, 2021)