1171-57-12   **Amy Eubanks**, **Mark Hughes*** (`hughes@mathematics.byu.edu`) and **Jared Slone**. *Using deep learning to generate knots with prescribed invariants.*

Generative techniques from deep learning have proven successful at producing realistic artificial images and videos, as well convincing synthetic data in a number of domains. In this talk I will outline an approach to using generative adversarial networks (GANs) to produce knots with specified invariant values. In particular, we show how to construct a GAN which takes as input a Jones polynomial, and outputs a knot with that Jones polynomial. We demonstrate how such GANs can learn to produce new knots that weren't involved in the training process, and how they can potentially be used to produce counterexamples to open conjectures. This is joint work with Amy Eubanks and Jared Slone. (Received July 25, 2021)