1125-55-1112 **Mark C Hughes*** (hughes@mathematics.byu.edu). *A neural network approach to computing knot invariants.*

In recent years neural networks have received a great deal of attention due to their remarkable ability to detect subtle and very complex patterns in large data sets. They have become an important machine learning tool and have been used extensively in many fields, including computer vision, fraud detection, artificial intelligence, and financial modeling.

Knots are topological objects which have been studied for much longer, typically using topological, geometric, and algebraic tools. Numerous knot invariants can be defined which reflect interesting properties of these knots.

In this talk I will outline an approach to using neural networks to model invariants of knots. Depending on the invariant of interest, these approaches can yield surprisingly accurate models. I will show how the predictions made by these models can be used in certain cases to compute values of invariants such as the slice genus and Ozsváth-Szabó τ-invariant for previously unknown knots. (Received September 14, 2016)